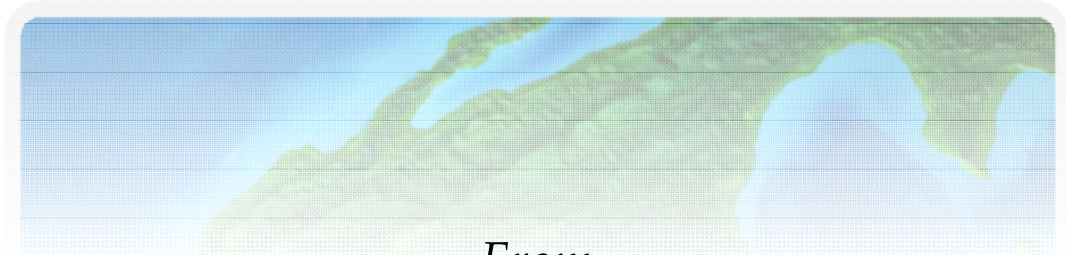


LETTER TO REPRESENTATIVES ED MARKEY AND JOE BARTON

U.S. House of Representatives Committee on
Energy and Commerce



From
The Viscount Monckton of Brenchley



CARIE ❁ RANNOCH ❁ PH17 2QJ

Flag 3

From: The Viscount Monckton of Brenchley

30 March 2009

The Hon. Representative Ed Markey, and The Hon. Representative Joe Barton,
Committee on Energy and Commerce, US House of Representatives, Washington, DC.

Gentlemen,

Questions raised by the Subcommittee on Energy & Environment

I am most grateful for the fairness and good humor with which Chairman Markey conducted the hearing of 26 March 2009 on the question of adaptation to “global warming”. The calibre, commitment, and concern of Hon. Gentleladies and Gentlemen on both sides of the House were self-evident.

However, my notes of the hearing indicate that certain national and international executive agencies may have materially, serially, seriously, and successfully misled your Congress for several years about the imagined extent, anthropogenic component, and effects of “global warming”.

President Dwight D. Eisenhower, in his farewell address to the nation in 1961, gave a warning “that public policy could itself become the captive of a scientific-technological elite.” He said –

“Partly because of the huge costs involved, a government contract becomes virtually a substitute for intellectual curiosity. ... The prospect of domination of the nation’s scholars by Federal employment, project allocations, and the power of money is ever present – and is gravely to be regarded.”

Nearly all of your nation’s scholars and scientists owe their primary livelihood to the involuntary generosity of the taxpayer. Some of your rent-seeking, scientific-technological elite, taking willful and shameless advantage of the taxpayer’s largesse and of the scientific illiteracy that is now widespread, are mightily enriching themselves by misleading your Congress into appropriating disproportionately large sums to permit them to address the non-problem of anthropogenic “global warming”.

The right policy to address a non-problem is to have the courage to do nothing. Therefore I am copying this letter to the President of the United States and to Madame Speaker Pelosi, with a recommendation that they should heed President Eisenhower’s warning, and should abandon all measures and expenditures in attempted mitigation of anthropogenic “global warming” until global mean surface temperature shall have increased by at least 2 Fahrenheit degrees compared with the temperature in the year 2000. That small, harmless, beneficial increase is not likely to occur for at least a century, if then.

At the hearing on March 26, 2009, Congressman Joe Barton required me to supply to the Committee further and better particulars in justification and verification of the three graphs that were included in my written testimony and were displayed during my oral testimony.

Also, I was later asked to provide to the Committee some justification and verification of my assertion that the cumulative frequency, intensity, and duration of all hurricanes, typhoons, and tropical cyclones is currently less than at any time in the 30-year satellite record.

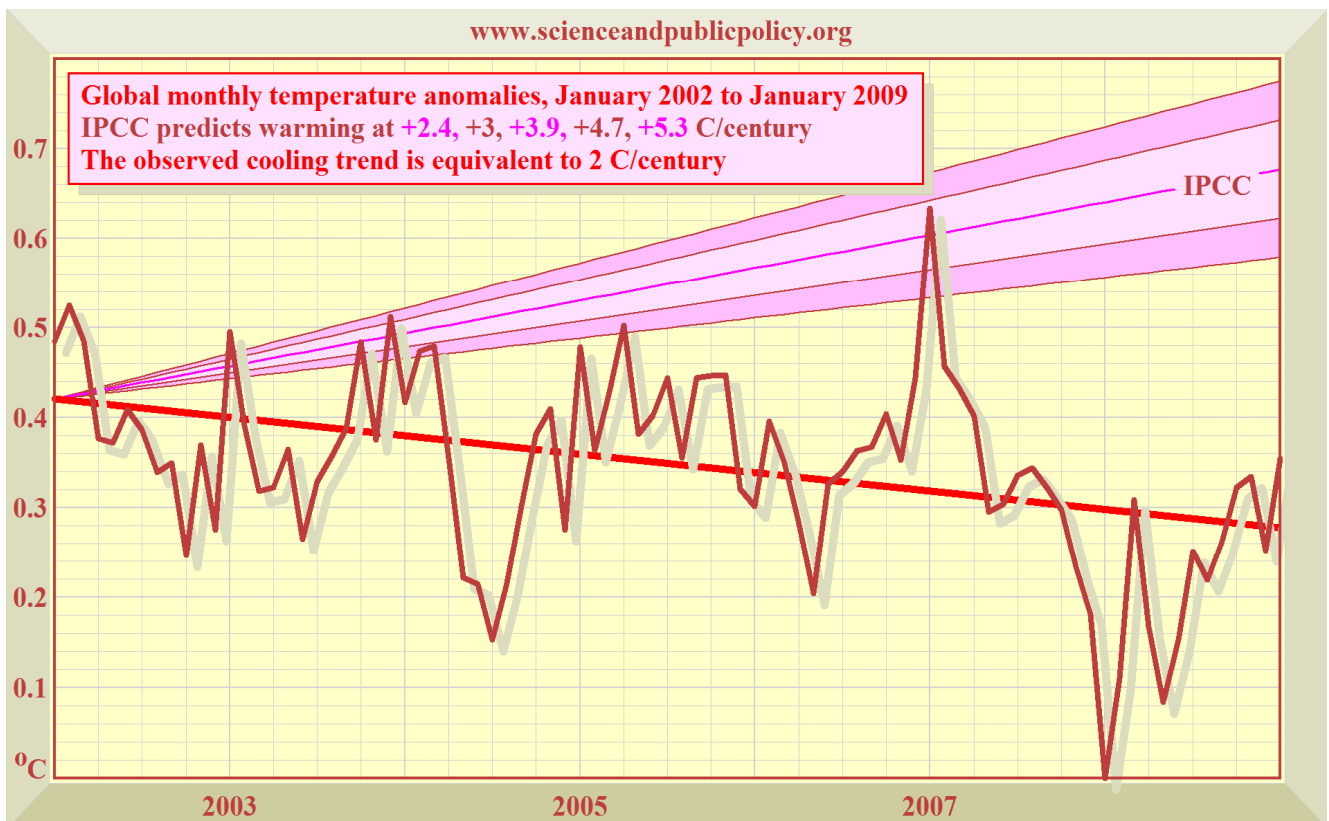
In addition, I made notes of concerns raised by Hon. Members of the Committee during their interventions and am taking the opportunity to respond to them in this letter.

I apologize to the Committee that traveling commitments have prevented me from supplying the necessary responses on the day of the hearing itself. No discourtesy was intended. Without objection, I hope that this letter and its technical attachment will be entered into the official record of the hearing.

Has our planet cooled for seven years?

Representative Barton bluntly asked Tom Karl, the Director of the National Climatic Data Center, whether he thought I had misled Congress by presenting in my testimony a graph establishing that there has been global cooling for seven years, at a rate equivalent to 3.5 Fahrenheit degrees per century –

7 years' global cooling at 3.5 F°/century



What “global warming”? The spline-curve plots the monthly mean of the global surface temperature anomalies published by the Hadley Center/Climate Research Unit and by the US National Climatic Data Center, and of the satellite lower-troposphere anomalies published by Remote Sensing Systems Inc. and by the University of Alabama at Huntsville. Beneath the spline-curve, the bright red straight line, the least-squares linear regression trend on the data, shows a (largely-unreported) global cooling for seven years at a rate equivalent to 3.5 F°/century. The pink zone shows the UN’s projected range of equilibrium warming rates over the period on the “business-as-usual” scenario A2. Within this zone, the pale pink region represents one standard deviation either side of the UN’s central estimate of 7 F° warming to 2100. The basis of calculation for this and similar global-temperature graphs is fully set forth in the technical paper annexed at Flag 1.

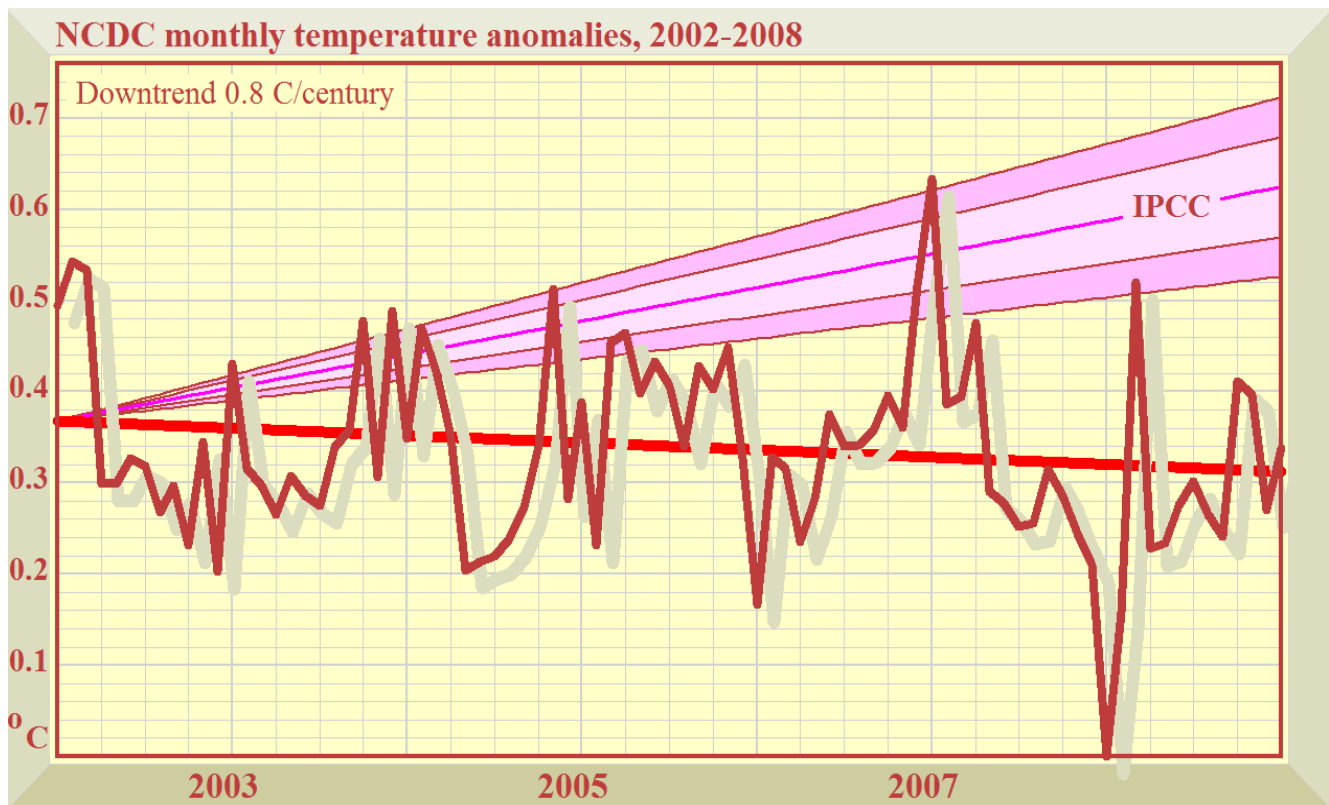
It was evident from the surprise of Representative Barton on seeing this graph that witnesses in support of what I shall call the “official” viewpoint at previous hearings on the question of “global warming” have

somehow succeeded in withholding from the Committee the fact that global temperatures have been falling rapidly for seven years, contrary to the predictions of all of the computer models on which the UN relies. The Committee may well wonder what else the “official” witnesses have been withholding.

In this response to the Committee’s request for further and better particulars, I shall **red-flag** each point at which, were this an investigation into scientific fraud, my report to the prosecuting authorities would identify information or conduct that might merit further inquiry. A red flag should not be taken as indicating that fraud has occurred: that is a matter for a criminal jury. It is, however, an indication of an apparent irregularity giving grounds for concern and further inquiry, in the investigator’s opinion.

Red flag 1: Mr. Karl, in response to a very clearly-phrased and repeated question from Representative Barton, did not forthwith admit that global temperatures have indeed been falling rapidly for seven years. I do not know why he failed to admit this fact: for the global-temperature dataset compiled by the National Climatic Data Center, of which he is the Director, unequivocally confirms seven years’ rapid global cooling –

7 years’ global *cooling* unequivocally confirmed by NCDC



NCDC’s own dataset shows seven years’ global cooling: The temperature dataset published by the National Climatic Data Center shows global cooling at a rate equivalent to 1.4 F°/century. During the 20th century, global temperature rose by 1.3 F°.

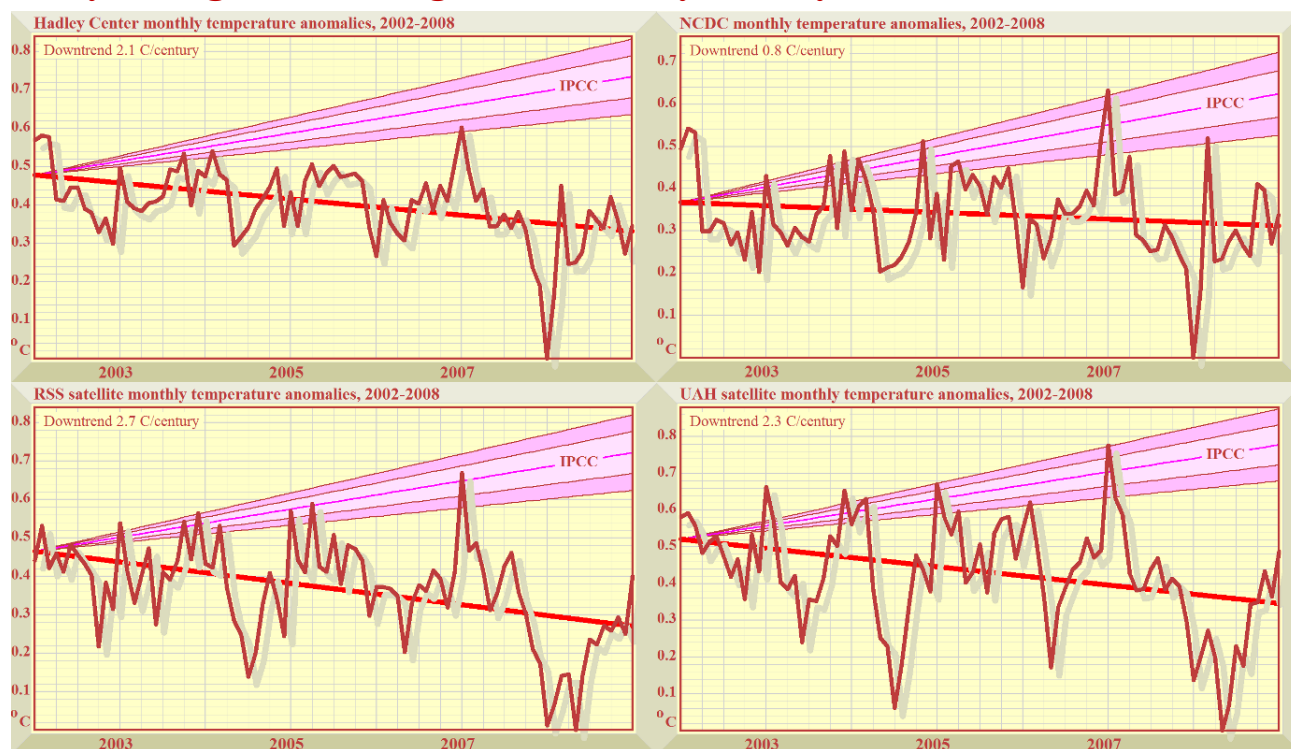
Red flag 2: Mr. Karl said that combining surface and tropospheric datasets, as I had combined them in this graph, was not an approach that his agency used, implying that the results might be misleading and might not truly demonstrate global cooling.

The advantage of a composite global-temperature index, however, is that the satellite datasets for the **lower** troposphere (not, as Mr. Karl implied, for the troposphere as a whole) are to some extent less prone to heat-island distortions arising from progressive urbanization than the terrestrial datasets on their own.

The composite index is accordingly more reliable than any individual dataset, particularly since there is evidence that at least one of the terrestrial datasets has been tampered with by its administrators to create a false impression that global temperature in the late 20th century rose more sharply than it did in reality – a point to which I shall return *infra*.

Indeed, all four of the datasets which were used in the compilation of the composite graph in my testimony, specifically including Mr. Karl's NCDC dataset, are unanimous in demonstrating that global temperature has been falling throughout the seven years 2002-2008 inclusive –

7 years' global cooling confirmed by Hadley, NCDC, RSS, and UAH



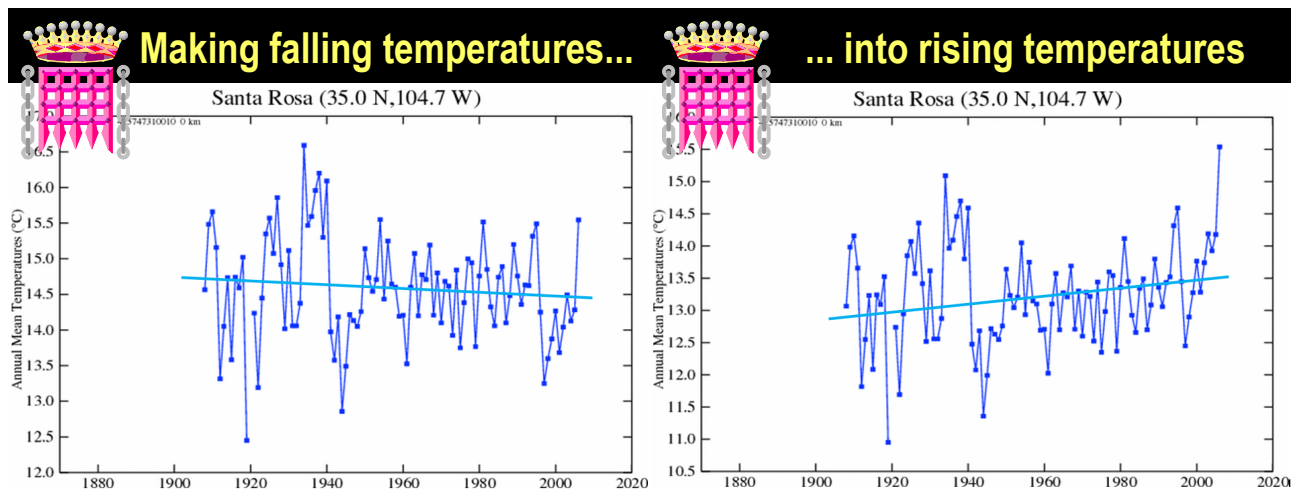
Unanimity: Each of the four separate datasets used in the compilation of the composite global-temperature index shows seven years' rapid global cooling. Each of the four individual graphs is generally similar to the graph of the combined datasets. Therefore use of the composite index was reasonable, fairly reflecting the underlying datasets.

Red flag 3: The NCDC global-temperature dataset shows a downtrend in global temperature over the past seven years that is conspicuously out of line with the other three datasets. The NCDC's downtrend, equivalent to 1.4 F°/century, is little more than one-third of the other three datasets' downtrends.

I have not yet had the opportunity to investigate why the NCDC's dataset appears to understate by a substantial margin the global cooling of the past seven years.

However, the NCDC's dataset appears to produce outputs very close to those of the NASA Goddard Institute of Space Studies, which has had to be excluded from the composite index because of persistent problems of objectivity and of reliability.

Red flag 4: I shall illustrate these problems with 100 years' temperature data from the temperature station at Santa Rosa, headquarters of NOAA, the parent organization of the NCDC –



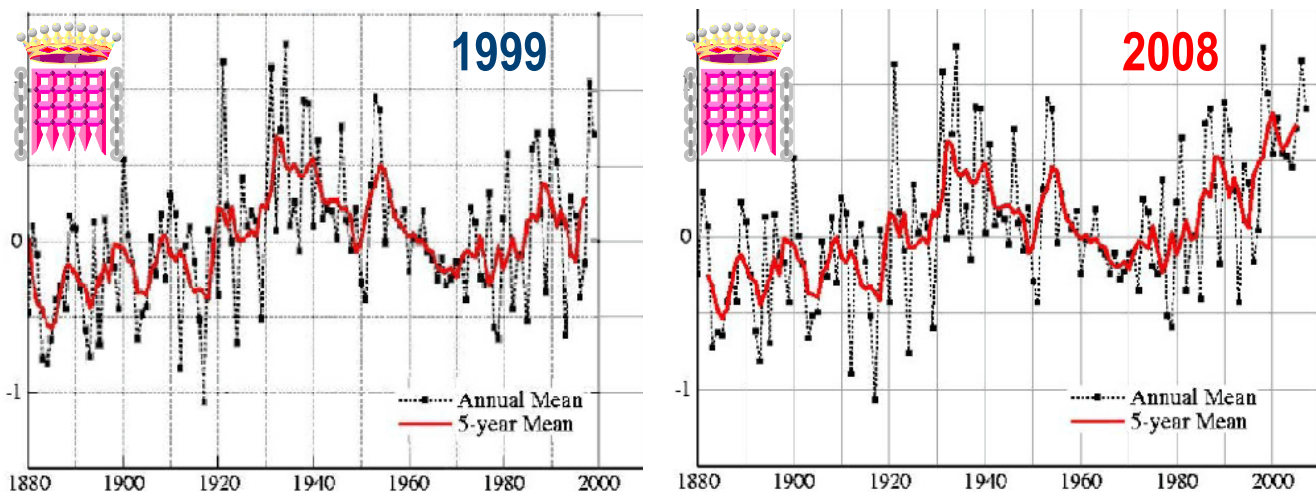
Prestidigitation: The raw temperature data (left) show cooling. The data after adjustment by GISS show warming, because data from the 1930s have been altered. The reason for this alteration of historical data is unclear and requires investigation.

Two questions arise. First, does the adjustment of the temperature data by GISS apply only to a few stations, making little difference to the global trend? Secondly, has the adjustment of the data become greater over time, indicating *prima facie* that a systematic and unjustifiable bias has been introduced?

Red flag 5: These questions may be simply answered by making a second comparison: this time between the GISS global dataset *after* data adjustment as it stood in 1999 and the same dataset *after* adjustment as it stood in 2008.

Any difference between the earlier and later versions of the *adjusted* dataset would be *prima facie* evidence of a bias that would require further explanation before any reliance could be placed upon the dataset –

Why the NASA GISS global-temperature dataset is not considered reliable



Bias over time: The GISS global-temperature dataset, after adjustment, as it stood in 1999 (left) and in 2008 (right). The data peak in the 1930s has been reduced in the later version of the dataset, and the 1998 peak has been markedly increased, artificially increasing the warming rate over the period. I am grateful to Dr. Anthony Watts for making these graphs public.

The data adjustments by GISS, therefore, are sufficient to affect the entire global database, and the comparison between the earlier and later versions of the *adjusted* global database over time shows that the adjustment that produces a warming bias has been increased over the years.

It is considerations such as these that cast doubt upon the reliability of the NASA GISS global-temperature dataset, and hence upon that of the very similar NOAA NCDC dataset. The Committee may wish to investigate this and other apparent defects and irregularities in the compilation of the official global-temperature datasets.

Red flag 6: Mr. Karl said that the temperature downtrend, if it had occurred, had been caused partly by a la Nina phase of the El Nino Southern Oscillation, a cooling event that he said had endured for three years. In fact, the 2007/8 la Nina commenced in late 2007, troughed at the end of that year, and persisted for little more than one year, not three, and the dataset of the NCDC, of which Mr. Karl is the Director, suggests the la Nina persisted for no longer than six months.

Therefore, la Nina has had less effect on the cooling trend than Mr. Karl suggests.

Mr. Karl predicted that the next El Nino Southern Oscillation (during which the oceans release heat to the atmosphere, causing a short but sudden warming of the atmosphere) would set a temperature record higher than that which had been observed during the Great El Nino of 1998.

However, the pronounced El Nino warming event that caused the spike in global mean surface temperatures in January 2007 did not set a new temperature record. A very substantial El Nino would now be required to set a new temperature record: there have been only three Great El Niño's in the past 350 years, of which the 1998 El Nino was one.

Red flag 7: Mr. Karl suggested that the global temperature downtrend of the past seven years, if it existed, was a consequence of natural variability in the climate.

However, since the recent downtrend was indeed caused by natural variability, then by the same token the global warming of the past 300 years, during the first 270 of which humankind could not – on any view – have had any appreciable influence on temperature, might also have been caused by natural variability.

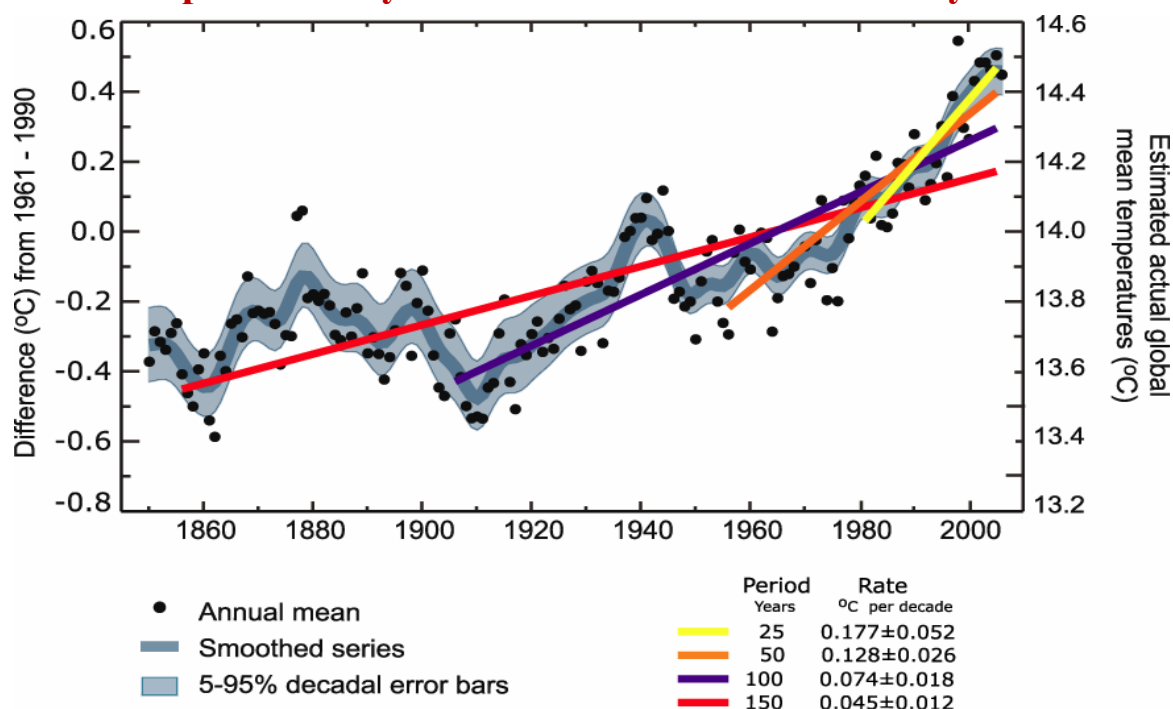
Red flag 8: Mr. Karl said that 13 of the past 14 years had been the warmest on record: however, even if that were true (his own NCDC dataset shows 12 of the past 14 years as being the warmest on the record, which dates back only to 1880), it is not evidence that the “global warming” of the past 300 years is anthropogenic.

The mere *fact* that warming has occurred tells us nothing about the *cause* of the warming. It is scarcely alarming that many of the warmest years on record are at the end of 300 years' warming.

Mr. Karl concurred with a suggestion from the Chair that I had taken the 21st-century downtrend out of context. Since the context is plainly of importance to the Committee, I am happy to provide verification of the points I made in response to the suggestions that the 21st-century downtrend should be placed in context.

Red flag 9: Let us begin with a temperature graph taken from the 2007 climate assessment report of the UN's climate panel, the IPCC. The graph falsely purports to show that the warming rate has been inexorably increasing throughout the past 150 years –

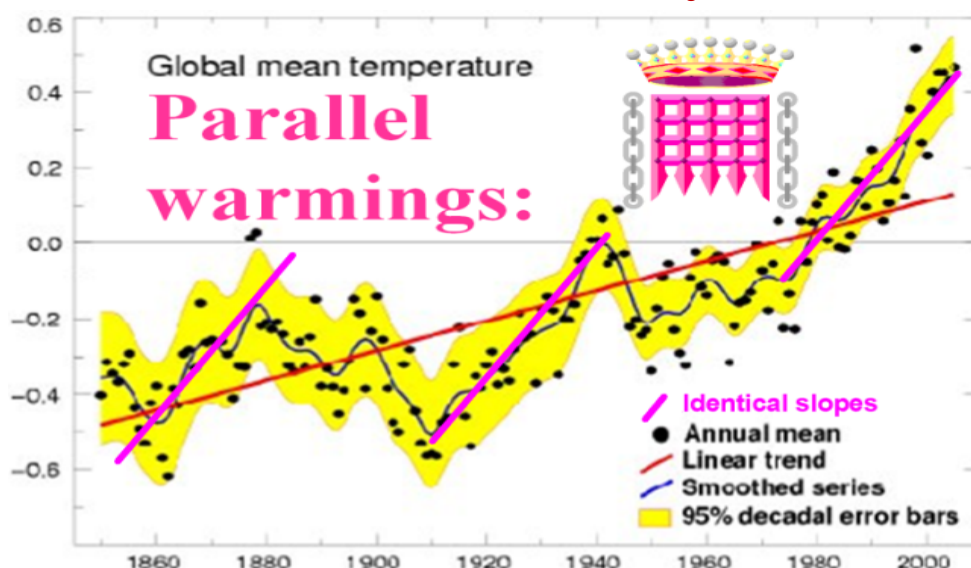
The endpoint fallacy: a dishonest statistical abuse by the IPCC



Lies, damned lies, & statistics: The IPCC's 2007 report, cited in a science lecture by Rajendra Pachauri, chairman of the IPCC's science working group, and also about to be cited with approval in a "Technical Support Document" in justification of the EPA's imminent finding that CO₂ and five other gases are jointly or severally "dangerous" in terms of the Clean Air Act, contains the above graph purporting to show that the rate at which the world is warming is inexorably increasing. The graph is an egregious instance of the endpoint fallacy, a dishonest abuse of statistics by which false trends are demonstrated by careful selection of endpoints or (in the present instance) startpoints when evaluating data trends.

Removal of the IPCC's false trend-lines from the data reveals the true position –

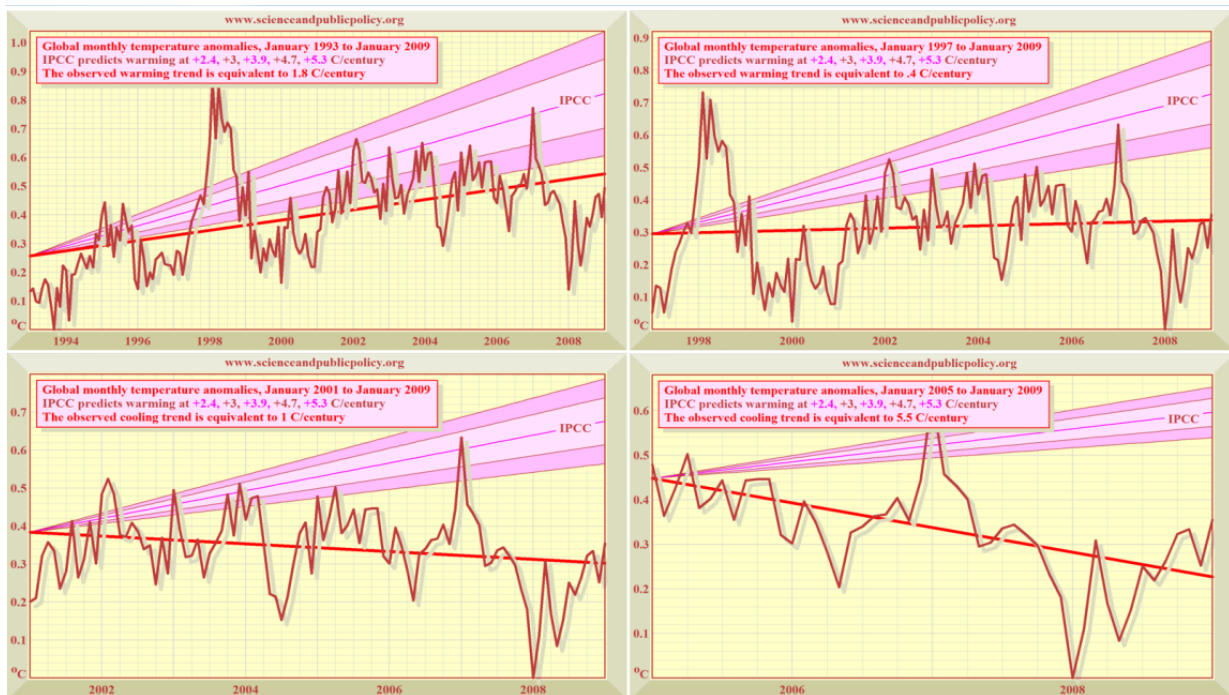
The truth: 1860-1880 and 1910-1940 warmed just as fast as 1975-1998



No anthropogenic signal: The world warmed at the same rate from 1860-1880 and from 1910-1940 as it did from 1975-1998 (see the three parallel magenta trend-lines). The former two periods occurred before humankind can possibly have had any significant influence on temperature. Therefore there is no anthropogenic signal in the global temperature record, and no basis for the IPCC's assertion that the warming rate is accelerating.

To demonstrate why the endpoint fallacy is a shoddy statistical abuse, we can use the IPCC's own global temperature data to deliver a result precisely the opposite of that which the IPCC tries to draw –

Heading for a new Ice Age? “Global warming” becomes cooling

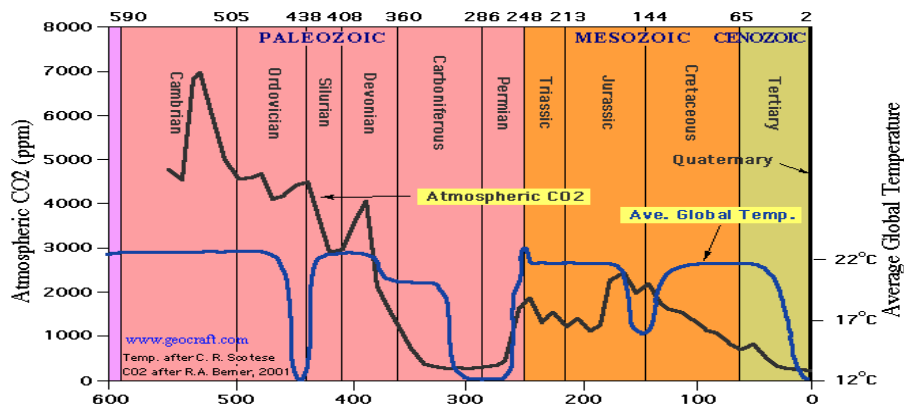


Any result you want: Beginning in 1993 (top left) and advancing the start-date successively by 4 years at a time, the IPCC's own data show the world heading for an Ice Age. Using the same data as the IPCC, we reach a diametrically opposite (and equally unjustifiable) conclusion, proving the IPCC's abuse of statistical method.

No reliance can be placed upon purported temperature trends that depend arbitrarily upon a careful selection of start-dates and end-dates. The IPCC and Dr. Pachauri were wrong, and the EPA will be wrong, to rely upon the endpoint fallacy as the basis for their erroneous conclusion that warming rates that are far from unprecedented are accelerating when they are doing nothing of the kind.

Plainly, a longer perspective is desirable. Let us go back 600 million years –

Lack of correlation implies lack of causation



Sub specie aeternitatis, the correlation between atmospheric CO₂ concentration and global mean surface temperature is non-existent: above 915 ppmv the logarithmic relation between CO₂ and temperature fails (Myrhe et al., 1998), and the addition of further CO₂ has little further influence over global atmospheric temperatures.

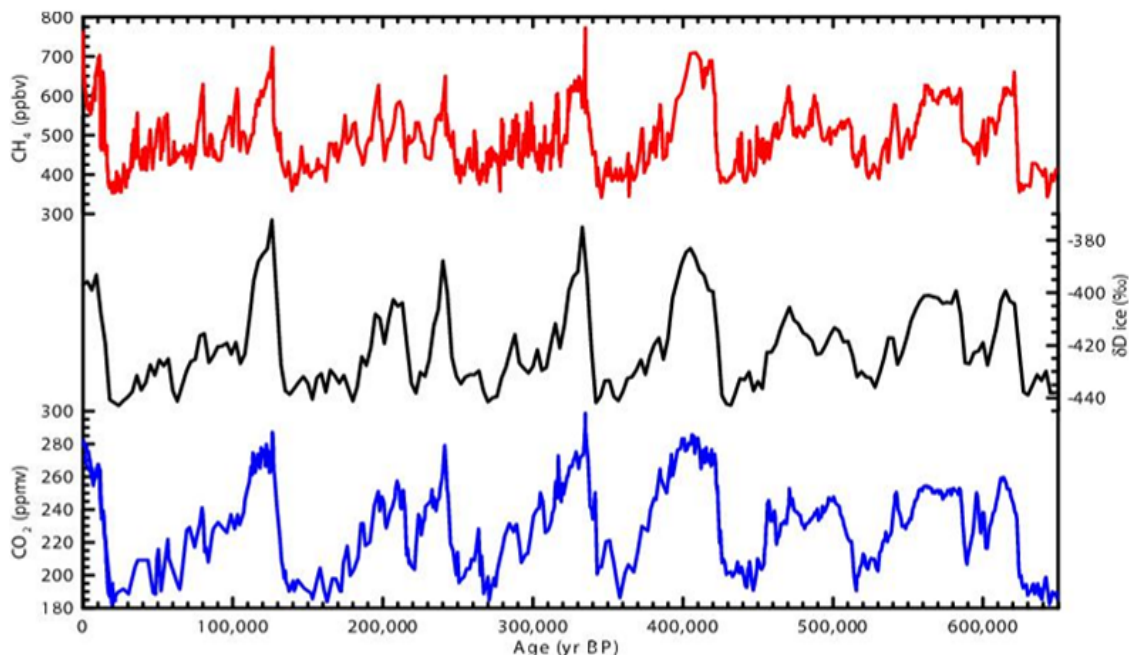
Throughout the past 600 million years, the mode of temperature has been 12.5 Fahrenheit degrees warmer than the present, but atmospheric CO₂ concentration peaked at 7000 parts per million by volume in the Cambrian era.

It was at this time that the calcite corals originated. There was also a very high CO₂ concentration compared with today's during the Triassic era, when the delicate aragonite corals were first created by algal symbiosis. Congressman Inslee suggested that corals were no longer adapted to high CO₂ concentrations: he felt that acidification of the oceans would harm them.

However, measurements of ocean pH over time are few, and are not adequate to demonstrate any acidification of the oceans: the generally-quoted reduction of 0.1 pH units is derived chiefly from modeling. Today's CO₂ concentration is almost the lowest in the geological record, endorsing Will Happer's testimony before the Senate earlier this month that the planet is currently starved of CO₂, and has been so starved for several million years.

The Vostok ice cores provide a detailed record for the past 650,000 years –

650,000 years' methane, temperature, and CO₂



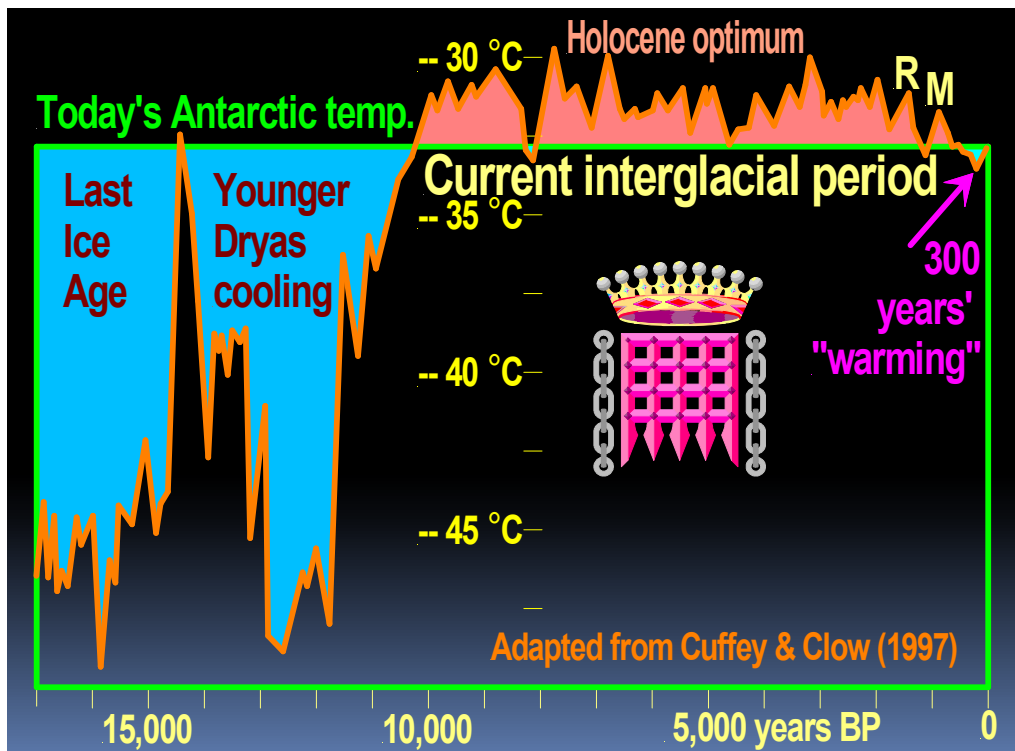
Which came first? Methane concentration (red), temperature proxy (black) and CO₂ concentration (blue) from the present (left) to 650,000 years before present (right).

Red flag 10: The Vostok ice cores show that in the past 650,000 years the correlation between greenhouse gases and temperature was close. Al Gore said in his movie that whenever CO₂ changed, temperature changed.

However, it was temperature that changed first, and CO₂ that followed 800-2800 years later. The latter change cannot have caused the former.

It is also worth considering the temperature record during the Holocene – the 10,000-year period following the last Ice Age –

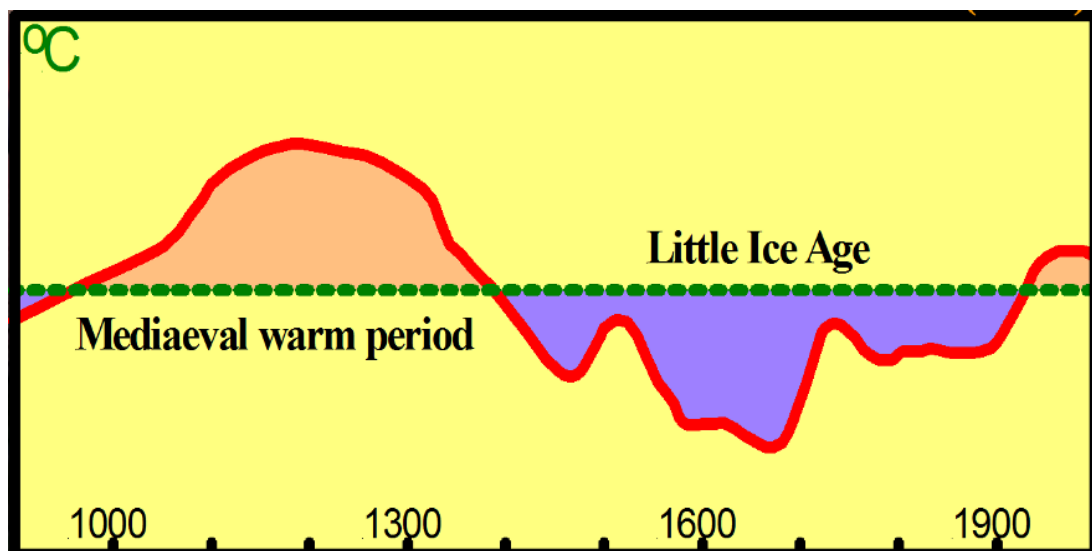
It was warmer than the present for 10,000 years



"Global warming" in perspective: The recent 300-year period of "global warming", nearly all of which cannot have been anthropogenic, is insignificant in comparison with the Holocene climate record. Throughout much of the past 10,000 years, including the Minoan, Roman (R), and Medieval (M) warm periods, global temperatures were up to 5 Fahrenheit degrees warmer than the present. Today's temperatures are not unprecedented.

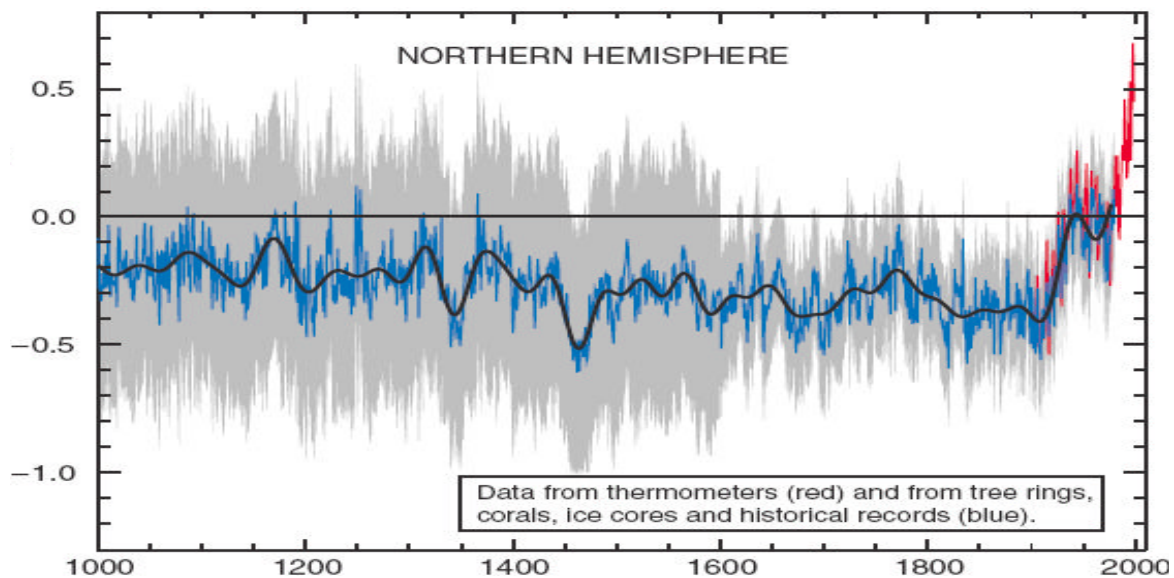
Red flag 11: Unfortunately, the IPCC has made a determined effort artificially to abolish the medieval warm period, apparently with the intention of making it appear, falsely, that today's global mean surface temperatures are unprecedented in recent history.

Now you see it (IPCC, 1990) ...



Medieval warm period? Yes. This drawing of a graph in the IPCC's 1990 report shows it clearly.

... now you don't (IPCC, 2001)



Medieval warm period? Not any more: the UN purported to abolish it in its 2001 assessment report. The above graph appeared six times, in full color, and at large scale, in the 2001 report, the only graph to be so favored.

The IPCC notoriously abolished the medieval warm period in its 2001 report, having explicitly acknowledged its existence in its 1990 report. Its justification for the purported abolition was highly questionable. The prominence that it accorded to the 2001 graph – the only one in the entire report to be reproduced six times, in full color, and at large scale – suggests a political rather than a scientific motive.

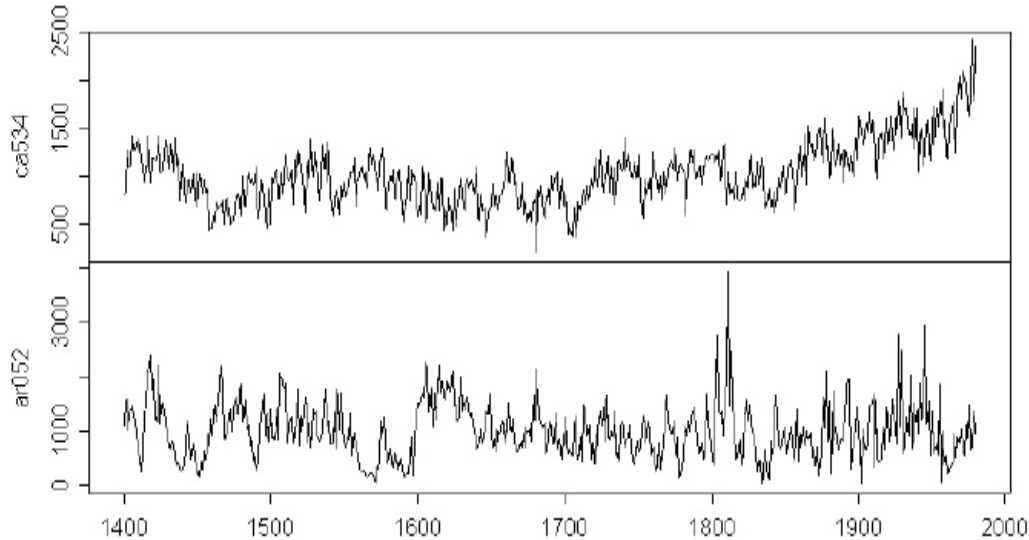
Red flag 12: The UN's report relied upon a paper in *Nature* that contained a number of abuses of sound statistical practice. The paper, (Mann *et al.*, 1998-1999), relied heavily upon bristlecone-pine proxies for pre-instrumental temperature change, even though a previous UN report had explicitly recommended against the use of such proxies on the ground that the width of the tree-rings is influenced not only by temperature change but also by changes in precipitation, and most notably by changes in atmospheric CO₂ concentration. Recent attempts by Mann *et al.* to revive the unsound graph regrettably suffer from the same central defect as the original: removing the bristlecone proxies and a further defective outlier (the Tiljander proxy) from among the proxy datasets clearly shows that the medieval warm period was real, and appreciably warmer than the present day.

The unsatisfactory statistical methods in Mann *et al.* were thoroughly exposed by McIntyre & McKittrick (2003, 2005). In all material respects, the findings of McIntyre & McKittrick were powerfully endorsed by a detailed investigative study by three statisticians at the instigation of the House (Wegman, 2005).

Red flag 13: It is of particular concern that the compilers of the now-discredited graph upon which the UN unwisely placed such undue weight in its 2001 report were extremely reluctant to release their computer programs and data. *Nature* failed to require them to produce the data; and it was only after numerous requests by McIntyre and McKittrick that Mann *et al.* eventually parted with the information necessary to allow a proper, independent, academic review of the graph that the UN had been so willing to accept without any real peer review.

Red flag 14: It is worth demonstrating one or two of the statistical abuses that led to the false abolition of the medieval warm period. One startling abuse was the disproportionate weight given to temperature proxies that provided Mann *et al.* with the “hockey-stick” profile they desired, in comparison with the lesser weight given to proxies that demonstrated the presence of the medieval warm period. An instance –

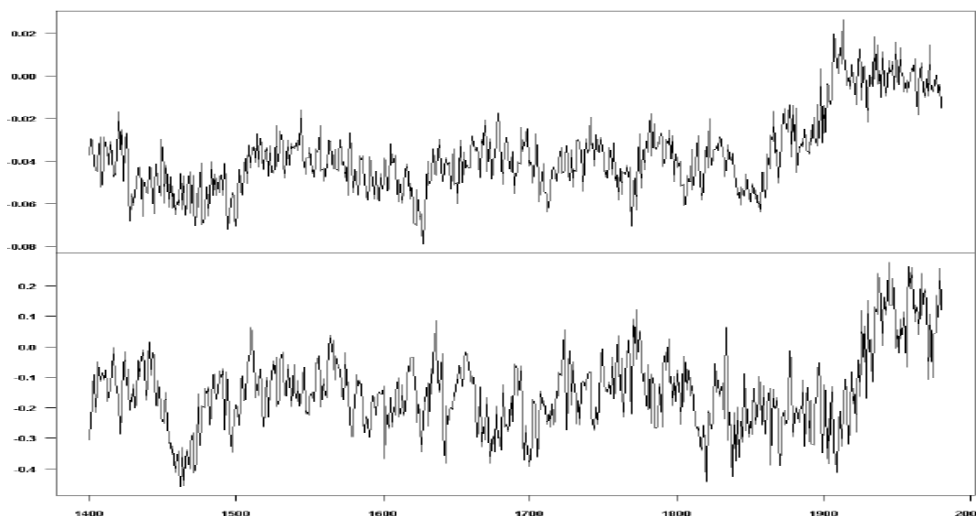
The upper panel was given 390 times the weighting of the lower panel



A false balance is abomination to the Lord: In the compilation of the UN graph purporting to abolish the medieval warm period, the upper data, showing the present day to be warmer than the previous 600 years, was given 390 times the weight of the lower data, showing the Middle Ages as warmer than the present.

Red flag 15: The computer model which was used to generate the defective UN graph was tuned to generate data curves showing the present day to be warmer than at any time over the past 600 years, regardless of whether the graph were based on genuine temperature proxies or on random red noise –

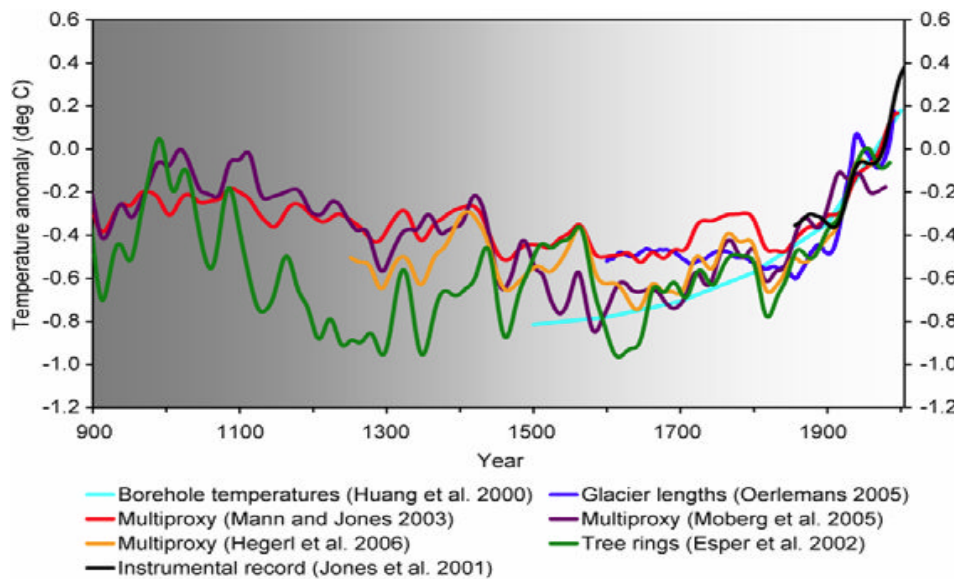
Genuine proxy data (top) and random red noise (bottom)



Whatever answer you want: The computer model that generated the UN's graph that "abolished" the medieval warm period generates "hockey-sticks" that show today's temperatures as warmer than for 600 years, with the post-1900 temperature increase serving as the blade of the hockey-stick. Remarkably, the model generates "hockey-sticks" even if, instead of the genuine temperature-proxy data (upper panel), random red noise (lower panel) is used.

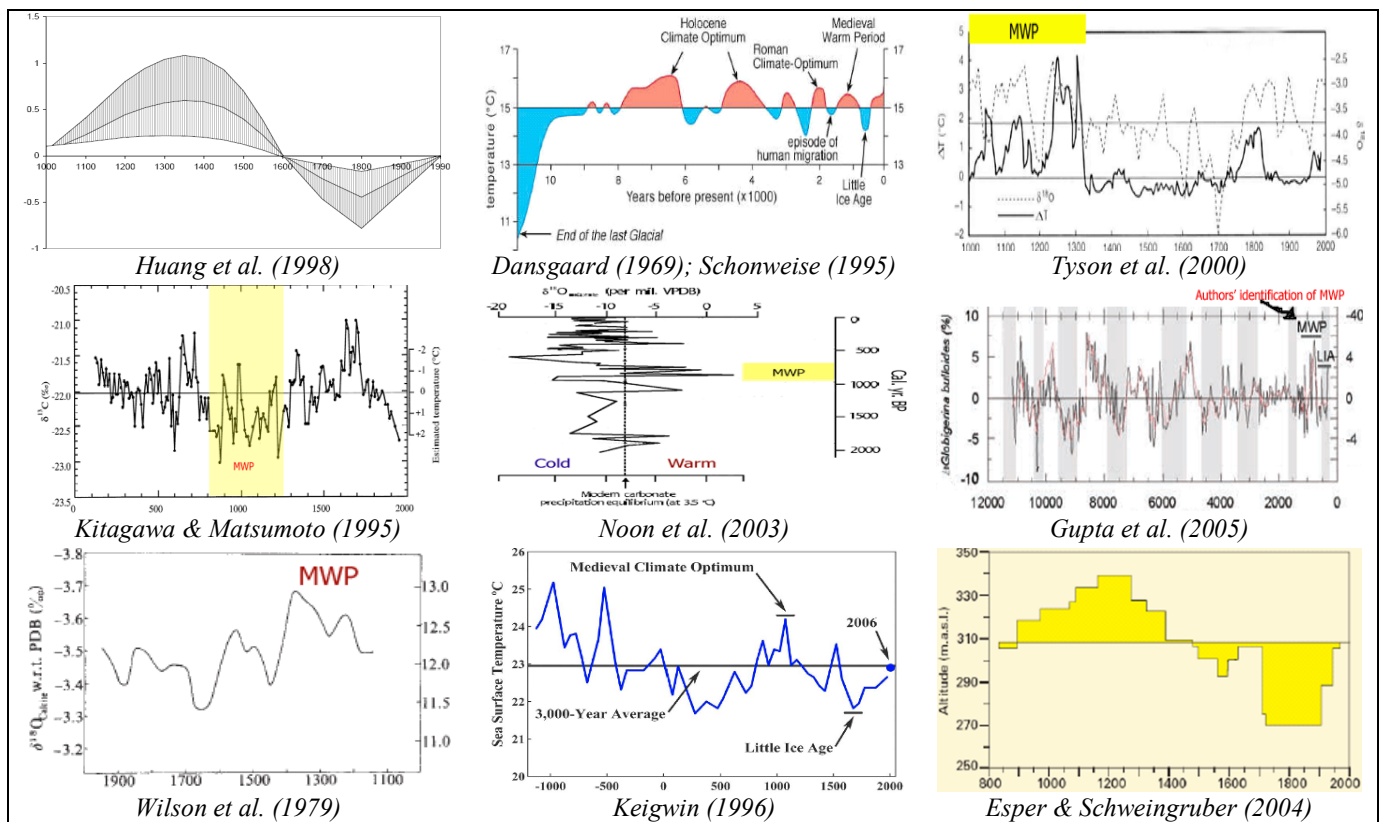
Red flag 16: The EPA, in the Technical Support Document that it will pray in aid as justification for its endangerment finding in respect of CO₂, will disregard the overwhelming majority of the papers in the scientific literature, and will also deny history by finding that there was no medieval warm period –

'No medieval warm period' (EPA, 2009, after NRC, 2006)



Notwithstanding official attempts either to eradicate the medieval warm period altogether or to show that it was not as warm as the present, in the past 25 years at least 670 scientists from 391 institutions in 40 countries have contributed to peer-reviewed papers in the learned literature establishing that the medieval warm period was real, global, and warmer than the present. Here are graphs from a few of these papers –

The medieval warm period graphically illustrated in the learned literature



Medieval warm period? Yes, nine times: it is as well established in the scientific literature as it is in the historical record.

Red flag 17: It was only after the UN's use of the defective graph had been challenged that a suspicious spate of papers supporting Mann *et al.* in their attempted abolition of the medieval warm period appeared in the scientific literature. However, the Wegman report showed that most of the authors of these papers

had previously been co-authors with Mann himself. This incident illustrates a central difficulty. Many of the scientific journals have declared prejudices in favour of the “official” position on climate change: therefore, they are far more indulgent of authors who support the “official” position than of skeptics.

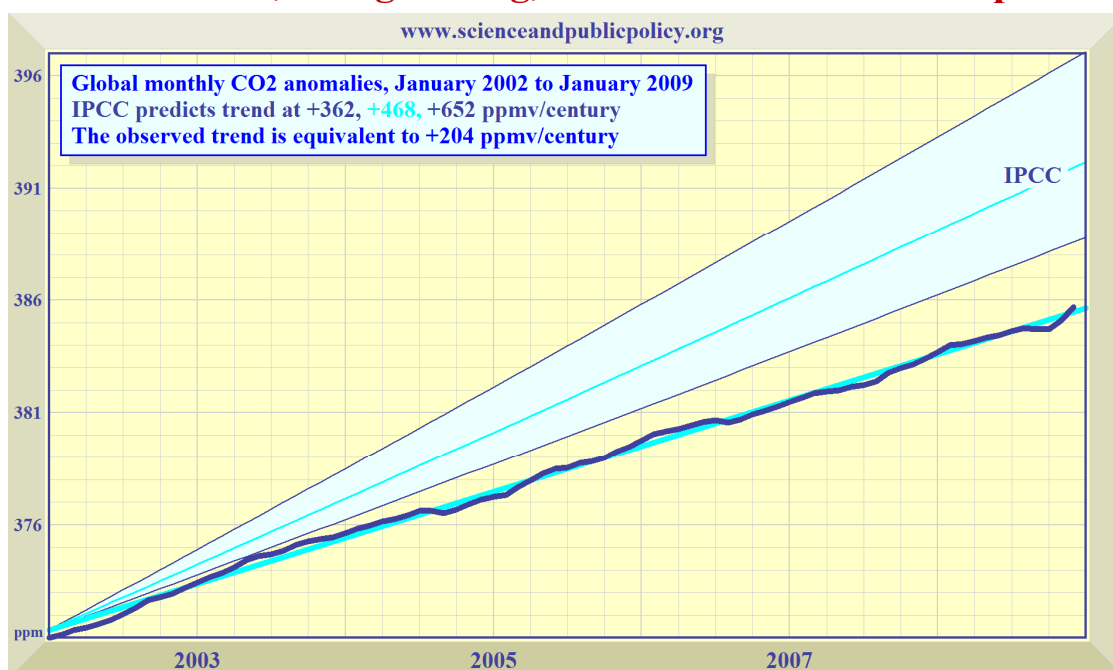
This declared bias among the journal editors allows supporters of the “official” position to knock down any skeptical paper by dashing off a quick rebuttal, which is eagerly printed after a minimum of scrutiny. Then the IPCC, which claims to operate by reviewing the literature, can concentrate on the rebuttals rather than the skeptical papers that question its position. At any rate, the IPCC, in its anxiety not to admit its mistake in attempting so prominently to abolish the medieval warm period in 2001, failed – and continues to fail – to take any account of the overwhelming majority of papers in the literature that demonstrate that the medieval warm period was real, global, and appreciably warmer than the present.

We conclude that today’s temperature is not exceptional. It was warmer than today in the medieval, Roman, and Minoan warm periods and throughout most of the Holocene; it was up to 7 F° warmer than the present in each of the four previous interglacial warm periods; and 12.5 F° warmer than the present throughout most of the past 600 million years. Yet Earth did not fry and the oceans did not acidify.

Is “global warming” happening faster than even the IPCC had thought?

In my testimony, I presented a graph indicating that the global atmospheric concentration of carbon dioxide was rising in a straight line at a rate well below the least of the IPCC’s exponential projections –

CO₂ concentration, though rising, is well below the IPCC’s predictions



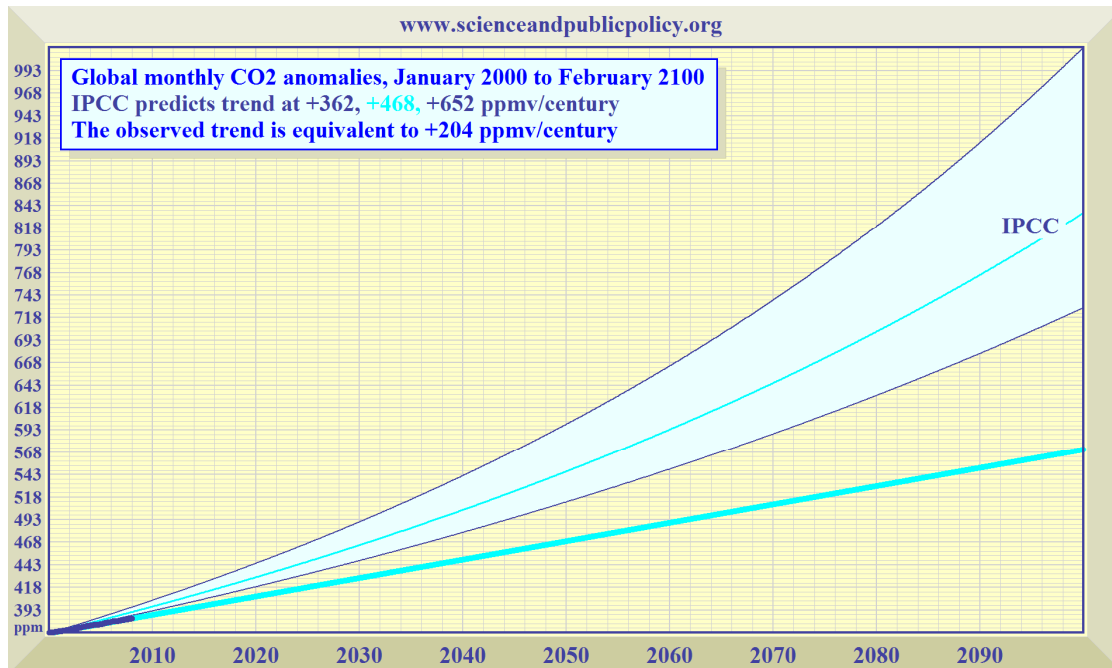
Observed and predicted CO₂ concentration, 2000-2100: The *pale-blue* region, bounded by exponential curves, is the UN’s predicted path for CO₂ concentration over the present century. The observed, deseasonalized CO₂ concentration change calculated by NOAA from January 2000 to November 2008 (*dark blue*) is near-coincident with the least-squares linear-regression trend (*solid, pale-blue line*) on the data. CO₂ concentration is no longer rising ever more rapidly, but only in a straight line, even though CO₂ emissions are rising ever more rapidly.

Red flag 18: The derivation of the carbon dioxide graph is more fully explained in the technical paper annexed at Flag 1. Briefly, the data (the thick, dark-blue spline-curve) are taken from the NOAA’s deseasonalized global CO₂ concentration anomaly dataset. The NOAA is the parent organization of the NCDC, of which Mr. Karl is the Director. The thick pale-blue line beneath the spline-curve is the least-

squares linear-regression trend on the data. It is visible that the trend-line is almost coincident with the data, showing CO₂ increasing not exponentially but merely linearly, well below the IPCC's prediction.

The pale blue region, bounded by exponential curves that appear at the above resolution to be close to linear, is the IPCC's projected range for CO₂ concentration increase over the seven-year period, based on its "business-as-usual" scenario A2. Extrapolating the present trend to 2100 yields the following graph –

The fast, exponential CO₂ growth predicted by the IPCC is not occurring



Observed CO₂ growth between 2000 and 2100 is linear, and is also well below the now-visibly-exponential growth curves (bounding the pale blue region) predicted by the IPCC in its 2007 report. If CO₂ continues on its present path throughout the 21st century, the IPCC's projections for anthropogenic temperature increase to the year 2100 must be halved.

Red flag 19: Mr. Karl, on being asked by the Committee to comment on the graph showing that CO₂ concentration had increased at a rate well below the least of the IPCC's predictions, responded to the effect that CO₂ emissions had been rising at a rate well above the greatest of the IPCC's predictions.

Yet it is settled science that it is not the *emissions* but the *concentration* in the atmosphere that determine the influence of CO₂ over temperature. The IPCC admits, in its 2001 report, that it cannot add up what is known as the "carbon budget" to within a factor of two of the right answer. According to the IPCC's estimates, atmospheric CO₂ concentration should be increasing by 4.1 parts per million by volume per year, but in the real world the rate of increase is less than half of that value, at just over 2 ppmv/year.

This very large and admitted discrepancy between prediction and reality is of great significance. On its own, it requires that all of the IPCC's predictions of the anthropogenic increase in temperature between 2000 and 2100 must be almost halved.

The IPCC's central estimate, on the "business-as-usual" scenario A2, is that the CO₂ concentration in 2100 will be 836 ppmv, implying a warming of 6 F° over the century, or 7 F° to equilibrium. On the current, near-linear trend, however, CO₂ concentration will be 575 ppmv, implying a warming of little more than 3 F°/century, or 3.5 F° to equilibrium. A warming of 3.5 F° would be harmless and beneficial. The IPCC ought not to have had any difficulty in predicting the future path of CO₂ *emissions*: the Chinese

Statistical Office, for instance, has made no secret of the very rapid rate at which the regime plans to open new coal-fired power-plants in the coming decade.

China is now the world's largest emitter of CO₂. She has sternly, absolutely, and rightly, refused to make any reduction in emissions below the *per-capita* emissions of the West. Paradoxically, to stabilize CO₂ emissions (even if stabilization were necessary), fossil-fueled growth is essential: for it is well established among demographers that the only reliable way of stabilizing population growth is to raise the general standard of living above the poverty-line. The fastest way to raise living standards is to burn fossil fuels.

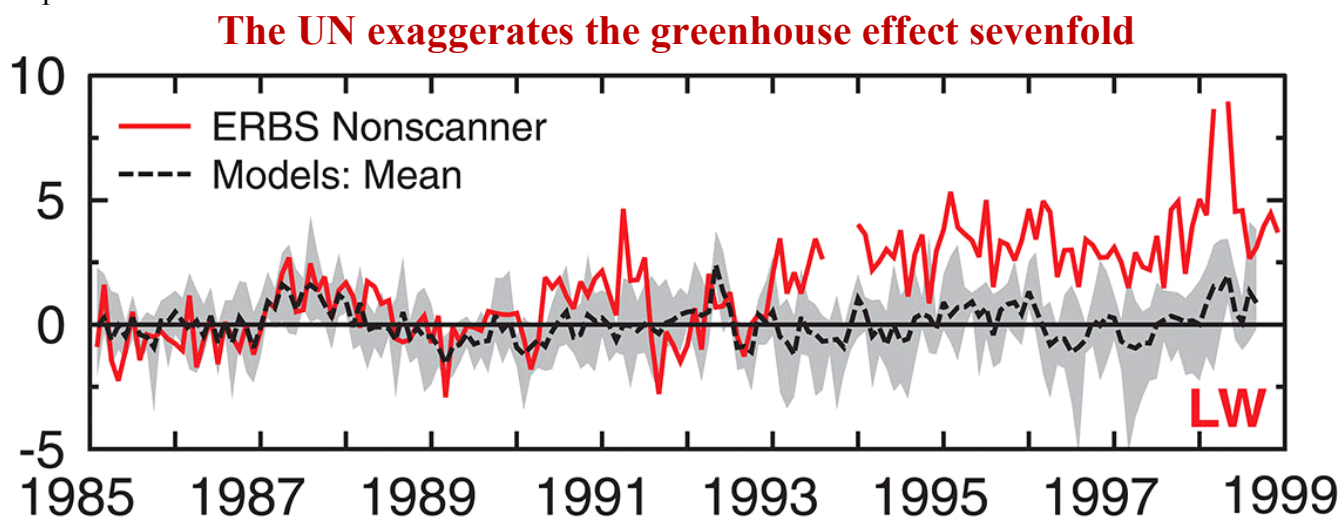
While population continues to grow, as it does in the poorest nations, CO₂ emissions will perforce grow with it. Stabilization of emissions cannot realistically begin until poverty has been eradicated by as much CO₂ emission as may be necessary, thereby making stabilization of the world population possible.

Whatever may be the opinions of Western politicians about the brutality and lack of democracy in China, it is imperative that we should do nothing to impede the economic growth of China: for without economic growth, her population will not stabilize. Even the often savage enforcement of the "one-child" policy has been insufficient to prevent a rapid and continuing growth in China's population.

It is only prosperity that will allow population stability. Therefore, it is essential that no Western nation or bloc should interfere with free trade by attempting to impose tariffs on goods made in China, India, Indonesia, Brazil, Russia, or other third-world countries now hoping to enjoy something of the prosperity that we have long been fortunate enough to take for granted.

Is the UN exaggerating the greenhouse effect sevenfold?

Red flag 20: In my testimony, I included a graph demonstrating that the diminution over time in outgoing long-wave radiation from the Earth's surface, as measured by the Earth Radiation Budget Experiment Satellite, was approximately one-seventh of that which the IPCC's computer models had been instructed to predict –



Smoking gun: 14 years' model-predicted (black) and **ERBE satellite-observed (red)** change in outgoing long-wave radiation. Seven times as much long-wave radiation as the models predict continues to escape to space. Data were tuned to coincide from 1985-1990 so as to show any divergence thereafter. The data closely track changes in global mean surface temperature. **Source:** Wielicki et al. (2002). See also Chou (1994); Covey (1995); Chen et al. (2002); Del Genio & Kovari (2002); Lin et al. (2002); Cess & Udelhofen (2003); Chou & Lindzen (2004); Hatzidimitriou et al. (2004); Clement & Soden (2005).

The behavior of outgoing long-wave radiation over time is of fundamental importance. Measurement of changes over time in outgoing long-wave radiation provides a direct method of measuring climate

sensitivity – i.e. the change in global mean surface temperature in response to a given proportionate increase in atmospheric CO₂ concentration.

As the world warms, whether by natural or by anthropogenic influences, conventional theory holds that positive temperature feedbacks, such as a near-exponential increase in the carrying capacity of the space occupied by the atmosphere for water vapor, will interfere with outgoing long-wave radiation over time at a rate sufficient to retain some of the radiation in the atmosphere, causing it to warm at a predictable rate.

However – and this is crucial – the satellite-measured diminution in outgoing long-wave radiation over time is one-seventh to one-tenth of the diminution predicted by the UN's climate models.

This very substantial discrepancy between prediction and observation – approximately an order of denary magnitude – implies an equally substantial overstatement of temperature response to anthropogenic CO₂ enrichment, because the “blanket” of CO₂, water vapor, and other heteroatomic gases is not thickening as fast as the models assume, or is not as effective in causing warming as the models predict, or both.

Covey (1995), basing his conclusions on data from Chou (1994), concludes that the discrepancy between model-predicted and actually-observed outgoing long-wave radiation implies outgoing long-wave radiation “an order of magnitude [i.e. 10 times] larger than that obtained in the earlier [model-based] studies.” Covey concludes –

“On its face, this implies a climate sensitivity an order of magnitude [i.e. 10 times] smaller than conventional wisdom would claim, especially in the tropics.”

Covey's result and Wielicki's result are broadly consistent with one another, and with many other similar results reported in the literature over the past 20 years. Yet Mr. Karl, asked to comment on the Wielicki graph, merely commented that orbital degradation had caused the difference between prediction and observation in the graph.

How, then, can the models relied upon by the UN have come to so very large an exaggeration of the warming effect of additional atmospheric CO₂ concentration? It is very likely that the exaggeration is inadvertent.

The central question in the climate debate is this. How much warming will a given proportionate increase in CO₂ concentration cause? This “climate sensitivity” question is central because if – as I shall show – the warming is very small, then there cannot be and will not be any “climate crisis”, none of the disasters imagined in official circles will occur, and the childishly Messianic millenarianism of the more excitable and less scientifically-literate politicians and journalists will have been proven unfounded.

Red flag 21: Arrhenius (1906) estimated 1.6 C° of warming at CO₂ doubling, down from 5 C° in his paper of 1896; however, Al Gore, Sir David King and others cite only the 1896 paper.

Red flag 22: Hansen (1988) estimated 4.2 C° of warming at CO₂ doubling; IPCC (1995) 3.8 C°; IPCC (2001) 3.5 C°; and IPCC (2007) 3.26 ± 0.69 C°. There is plainly no “consensus” as to the magnitude of the effect of CO₂ on temperature (for the IPCC does not even agree with itself), and if there is no consensus on climate sensitivity then there can be no consensus on anything else. Also, the UN's “official” estimates of climate sensitivity – the temperature response to doubling CO₂ concentration – are inexorably falling. How much further must they fall before they start to conform both to scientific theory and to satellite-observed reality?

The UN calculates greenhouse-enrichment-induced temperature change over time as the product of four parameters, the:

- **Radiative forcing**, which is the extra energy at the top of the atmosphere caused by atmospheric enrichment with a greenhouse gas such as CO₂;
- **Planck parameter**, which converts the tropopausal radiative forcing to surface temperature change in the absence of feedbacks;
- **Temperature-feedback multiplier**, which amplifies the initial warming in response to net-positive temperature feedbacks; and
- **Natural logarithm of the proportionate increase in CO₂ concentration.**

The relation is logarithmic because each additional CO₂ molecule has less effect on temperature than its predecessors, and – beyond 915 ppmv – it has practically no effect on temperature at all (Myrhe *et al.*, 1998, hold that the logarithmic formula fails at this point).

Red flag 23: It is at once apparent that even a very small exaggeration in the value of each of the four key parameters will cause a very large exaggeration when the four parameters are multiplied together to give the UN's projection of anthropogenic temperature change over time. For instance, even if each of the four parameters is exaggerated by as little as one-third, once the four parameters are multiplied together the projected temperature change will appear to be $(4/3)^4 = 3.16$, or more than thrice what it should be.

However, as I shall demonstrate, the UN has, on average, approximately *doubled* the value of each of the four parameters. That is, when they are multiplied together, the UN's projection of temperature increase to 2100 becomes approximately $2^4 = 16$ times too great. It is this central exaggeration on which all of the UN's excitable conclusions about the impacts of anthropogenic "global warming" absolutely depend.

Yet the vast majority of the scientists who wrote and reviewed the UN's climate reports are unaware of these exaggerations, and unaware that it is the multiplication together of four separate exaggerations that causes the very large overestimates of anthropogenic temperature change over the present century which repeated satellite measurements of changes in outgoing long-wave radiation have demonstrated, and without which the UN's entire case for alarm about our effect on the climate falls away.

Red flag 24: Most scientists are unaware of the magnitude of the UN's exaggeration, because the UN's treatment of the central question of climate sensitivity is obscurantist in the extreme. Consideration of the four key parameters is scattered untidily through several separate chapters of each report: yet the chapters are written and reviewed by different groups of scientists. At no point are the four parameters and the relationships between them drawn explicitly and clearly together.

Some of the parameters are not explicitly quantified. The question of climate sensitivity ought to be the first question dealt with in each major, quinquennial UN climate assessment: however, the topic is neither explicitly nor completely dealt with either in the 2001 or in the 2007 report. Readers of these reports are apparently expected to take the UN's calculations in relation to this central question purely on trust.

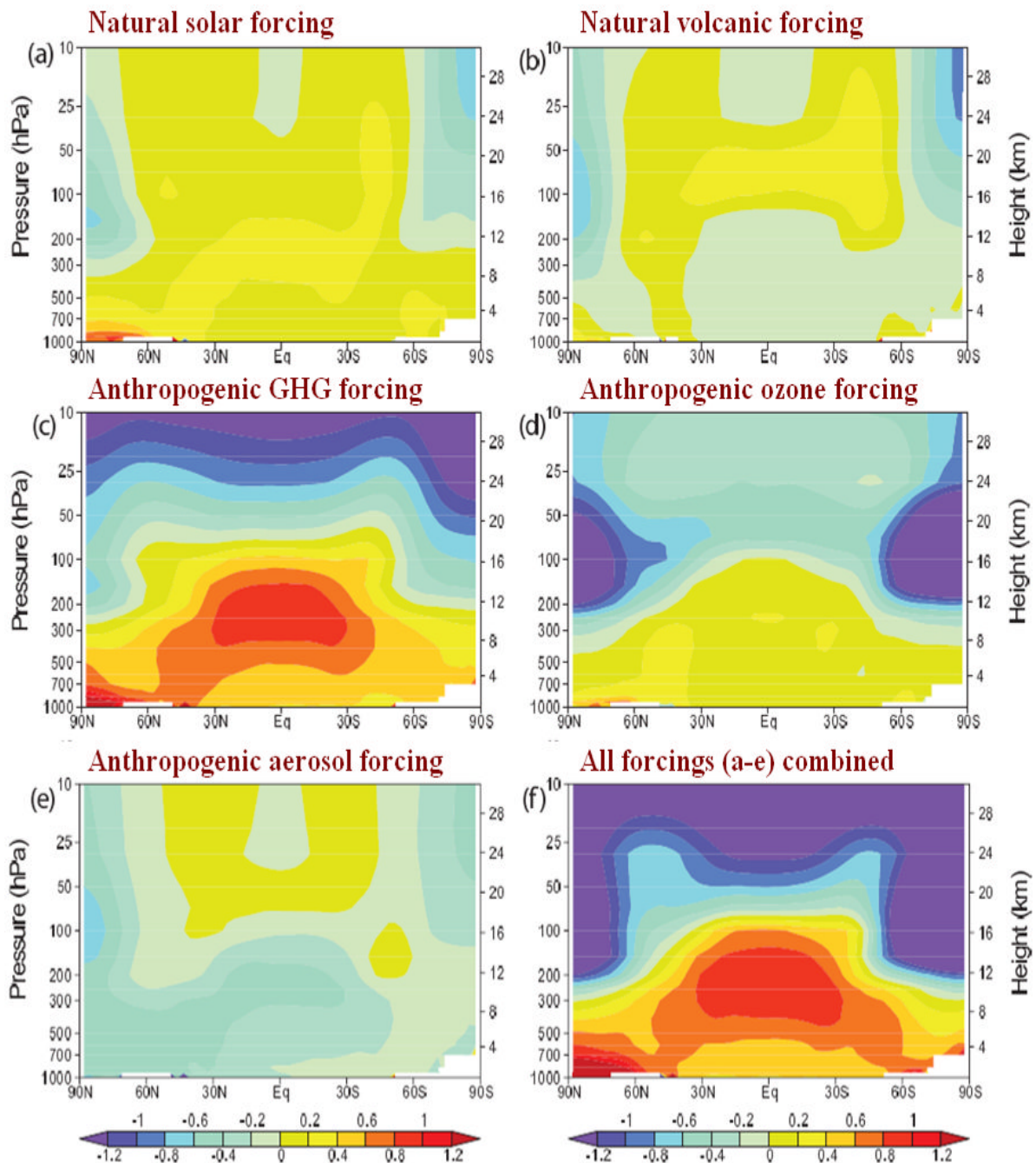
Often, the values selected by the UN exceed those in the very small number of papers that it cites as justification. These are some of the reasons why no one has noticed the large – and perhaps accidental – exaggeration that has demonstrably resulted from the UN's methodology.

As we have already seen, the UN's projection of the rate at which CO₂ accumulates in the atmosphere leads to an unwarrantable near-doubling of its estimate of temperature increase over the present century.

The three other parameters I have mentioned – radiative forcing, the Planck parameter and the feedback factor – are similarly exaggerated, as I shall now show.

The radiative forcing: The UN predicts a distinctive fingerprint of anthropogenic greenhouse warming – a “hot-spot” in the tropical upper troposphere (IPCC, 2007) –

Temperature fingerprints of five forcings, and of all five combined

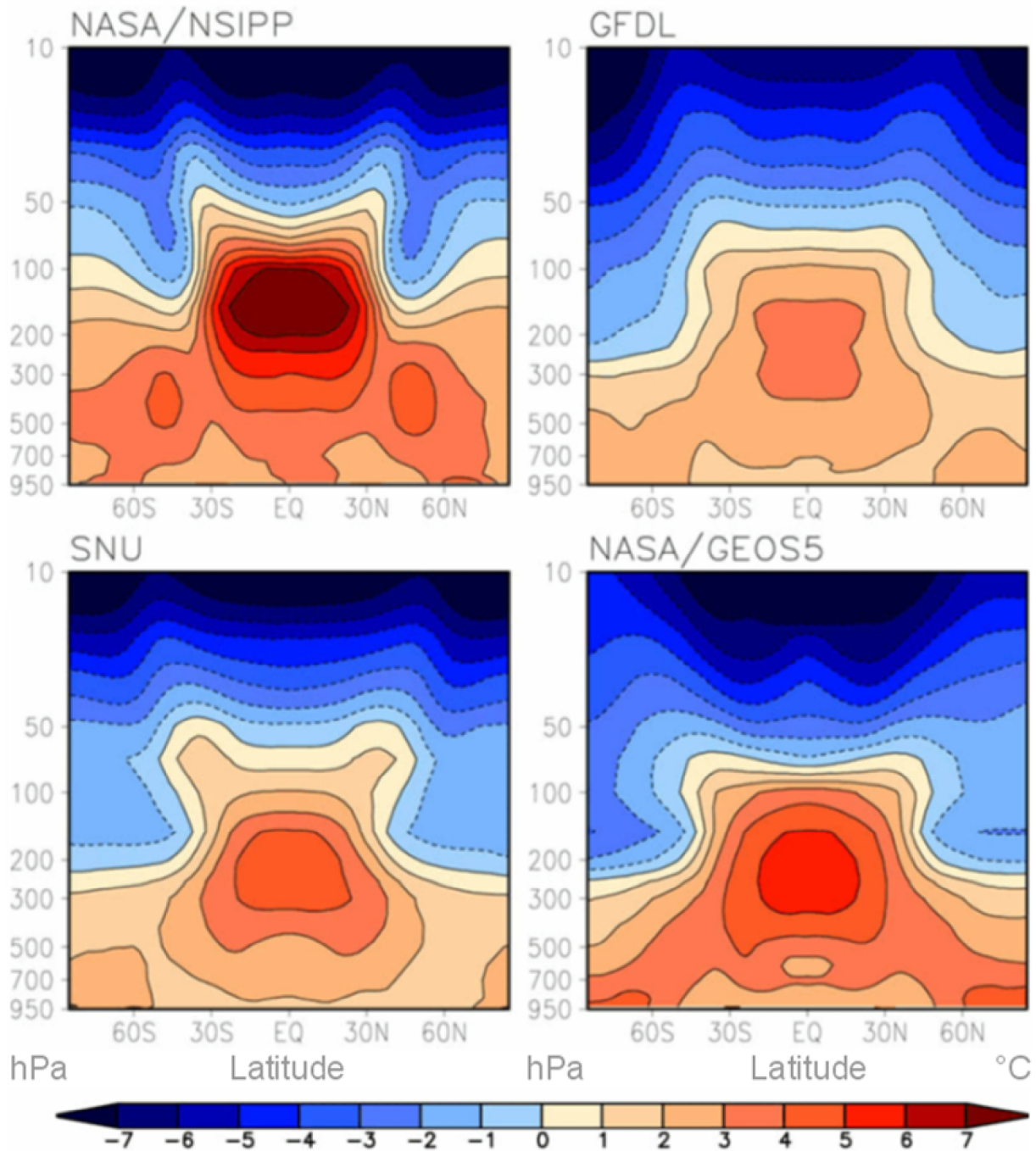


*Modelled zonal mean atmospheric temperature change (C°/century, 1890-1999) from five distinct forcings (a-e), and from all forcings combined (f). Altitude is in hPa (left scale) and km (right scale) vs. latitude (abscissa). **Source:** IPCC (2007).*

All of the models on which the UN relies predict that most of the atmospheric warming that arises from greenhouse-gas enrichment of the atmosphere will occur about six miles up in the tropical upper troposphere.

At that altitude, the warming rate is predicted to be 2-3 times that observed at the tropical surface (Lee *et al.*, 2007) –

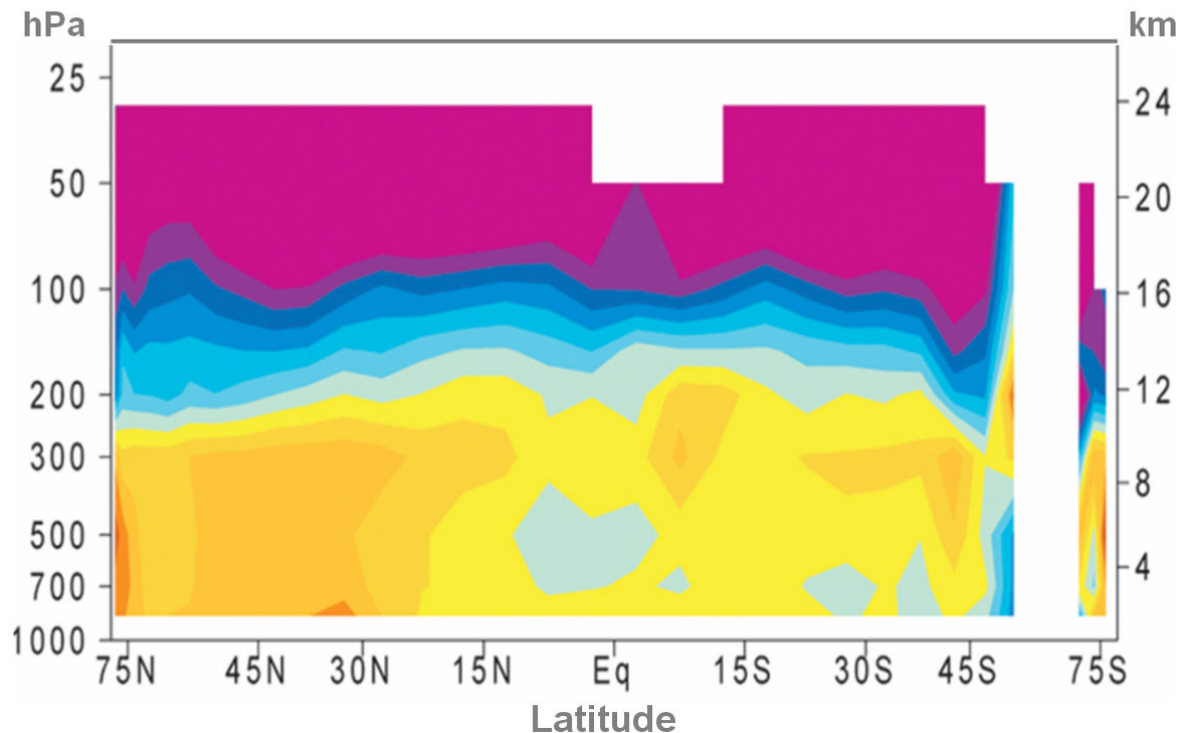
Fingerprints of anthropogenic warming projected by four UN models



*Zonal mean equilibrium temperature change (°C) at CO₂ doubling (2x CO₂ – control), as a function of latitude and pressure (hPa) for 4 general-circulation models. All show the projected fingerprint of anthropogenic greenhouse-gas warming: the tropical mid-troposphere “hot-spot” is projected to warm at twice or even thrice the surface rate. **Source:** Lee *et al.* (2007).*

Red flag 25: Four of the UN’s computer models, shown above, predict the “hot-spot’s” presence. However, the model-predicted tropical upper-troposphere “hot-spot” does not exist, as Figure 8 shows. It has not been observed in 50 years of radiosonde and drop-sonde measurements. It has not been observed in 30 years of satellite observations. It has not been observed at all. It is not there (HadAT, 2006) –

The absent fingerprint of anthropogenic greenhouse warming



*Altitude-vs.-latitude plot of observed relative warming rates in the satellite era. The greater rate of warming in the tropical mid-troposphere that is projected by general-circulation models is absent in this and all other observational datasets, whether satellite or radiosonde. Altitude units are hPa (left) and km (right). **Source:** Hadley Centre for Forecasting (HadAT, 2006).*

In a lecture given in 2008, Professor Lindzen concluded from the absence of the “hot-spot” that –

“... A doubling of CO₂ leads to surface warming of from about 1.5-3.5 C. By contrast, the observed warming over the past century or so amounts to only about 0.6-0.8 C (not all of which need be due to increased greenhouse gases). ... Using basic theory, modeling results and observations, we can reasonably bound the anthropogenic contributions to surface warming since 1979 to a third of the observed warming, leading to a climate sensitivity too small to offer any significant measure of alarm ...”.

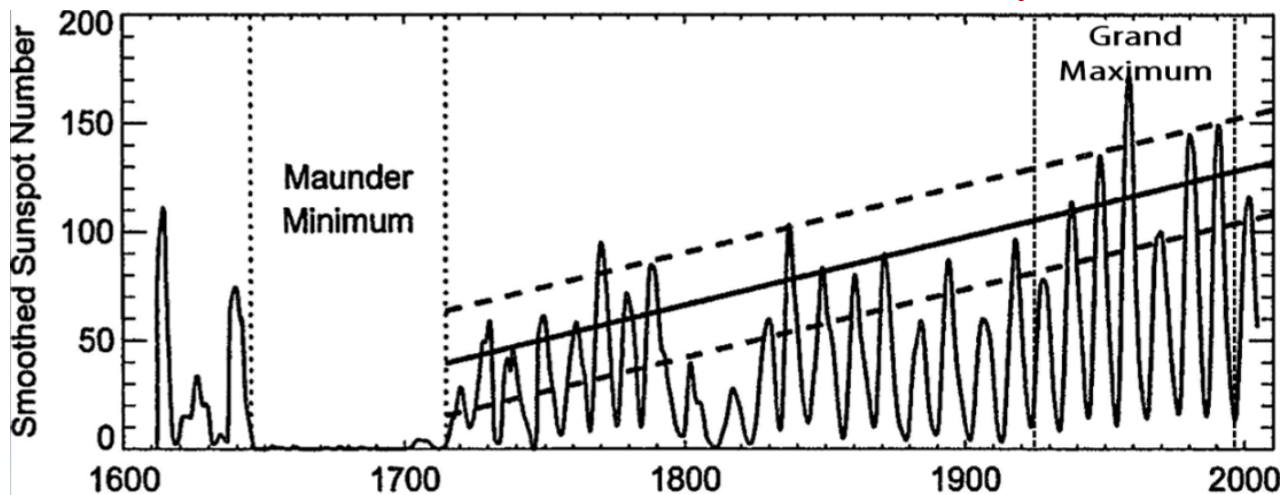
Red flag 26: In short, the absence of the model-predicted “hot-spot” requires us to divide the UN’s climate-sensitivity estimates by *at least* 3. Lindzen’s result is in line with that of Scafetta & West (2008), who attribute more than two-thirds of the past half-century’s “global warming” to the Sun.

Red flag 27: The UN does not consider solar changes to be significant, and has recently reduced its estimate of the solar forcing since 1750. However, it has long been established that a strong and inferentially causative link between variations in sunspot activity and in surface temperature exists.

For instance, it is well known that, during the 70-year Maunder Minimum or Grand Minimum from 1645 to 1715, during which there were fewer sunspots than at any previous period in the past 10,000 years (Hathaway, 2004), the rivers Thames and Hudson regularly froze over for long periods during the winter. Often the freezing was sufficiently intense to allow frost-fairs to be held on the ice. The UN’s value for the solar radiative forcing, however, is so low that its reports are unable to provide any explanation of the intense cold that obtained during the Grand Minimum.

From the Maunder Minimum to the 70-year Grand Maximum from 1925 to 1995, during which there was more solar activity than at almost any previous period in the past 11,400 years (Solanki *et al.*, 2005), solar activity as measured by the number of sunspots visible during the maximum of each 11-year solar cycle showed a steady increase –

From Grand Minimum to Grand Maximum, solar activity has increased



It's the Sun, stupid! As solar activity increased over the past 300 years from the 10,000-year low of the Grand Minimum to the 11,400-year high of the Grand Maximum that ended with the 20th century, global temperatures also increased by 0.5-0.7 C/century (Akasofu, 2008, private communication). During the decades following the peak of the solar Grand Maximum, warming was also observed on Mars, on Jupiter, on Neptune's largest moon, and even on distant Pluto. **Diagram source:** Hathaway, 2004, with the author's added indication of the Grand Maximum.

Red flag 28: The Planck parameter: The UN also exaggerates the Planck parameter by at least one-third, because it incorrectly takes temperature and radiant-energy values from planetary emitting surfaces six miles apart, effectively repealing the fundamental equation of radiative transfer. Also, the UN fails to make any allowance for diurnal and latitudinal variations, which, according to a private communication from Dr. David Evans, require a further 10% reduction in the value of the Planck parameter.

Red flag 29: The temperature-feedback multiplier: Finally, the UN exaggerates the feedback multiplier. It assumes that feedbacks, which we explained earlier, amplify the original forcing more than threefold. However, it underestimates the cooling effect of evaporation in calculating the water-vapour feedback (Wentz *et al.*, 2007); it fails to notice that relative humidity in the upper troposphere is low, greatly reducing the water-vapour feedback and possibly rendering it negative (Paltridge *et al.*, 2009), and it regards the cloud feedback as strongly positive when it should be net-negative (Spencer, 2007). These three considerations alone suggest that the UN has at least doubled the true value of the feedback multiplier. If the UN's stated maximum values for temperature feedbacks were right, the Earth would suffer from a "runaway greenhouse effect" that has self-evidently not occurred.

Red flag 30: Correcting for the UN's exaggerations of each of the four key parameters reduces climate sensitivity from 3.26 C to little more than 0.25 C by 2100, and near-certainly less than 1 C (Chylek, 2008; Lindzen, 2007; Monckton, 2008; Schwartz, 2007; etc., etc.). It is probably fair to say that the majority of the tiny fraction of papers on the climate that take the trouble to focus on this central question of climate sensitivity find it to be very substantially below the UN's wide but prodigiously-exaggerated range of estimates.

The theoretical considerations that I have briefly outlined support the satellite observations indicating that the UN has very substantially overestimated the effect of anthropogenic CO₂

enrichment on global mean surface temperature. For a more explicitly mathematical and physical treatment of climate sensitivity, see Monckton (2008).

I have now justified the three graphs that were displayed in my testimony before the Committee. I was also specifically asked to justify my assertion that the Accumulated Cyclone Energy Index has recently recorded its least value in the 30-year record, indicating not an increase but a decline in the combined frequency, duration, and intensity of hurricanes, typhoons, and tropical cyclones.

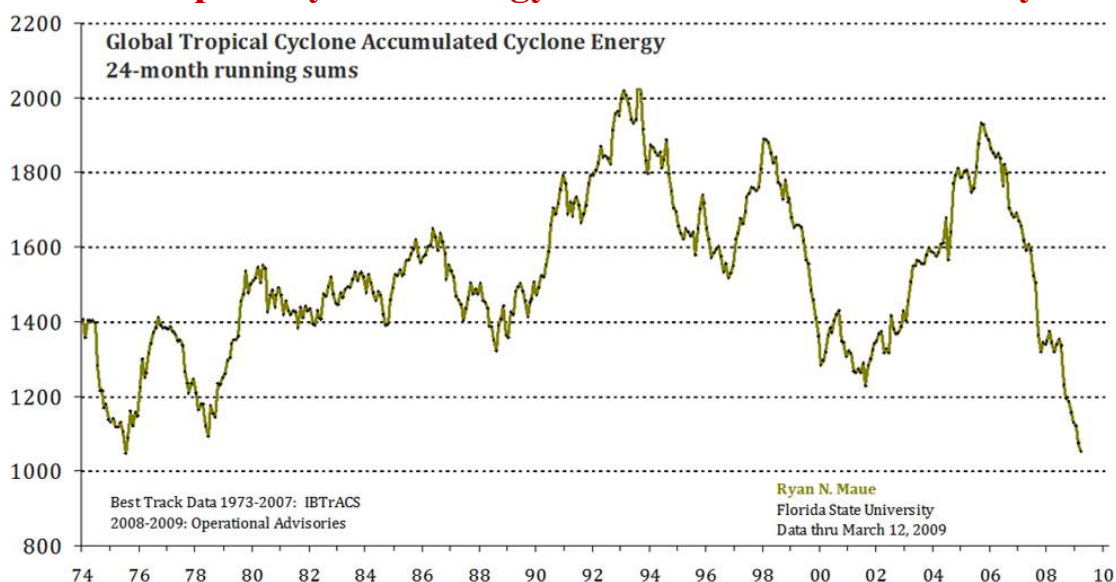
Are hurricanes, typhoons, and tropical cyclones declining?

The Committee asked Mr. Karl and me to comment on whether hurricanes were increasing or declining.

Red flag 31: Mr. Karl said that there had been an increase in the number of intense tropical storms in the Atlantic over the past 150 years. However, even if that had been the case, humankind cannot have been responsible for the warming that occurred during the first 120 of those 150 years. Furthermore, as I established *supra*, the rate of warming during the 23 years 1975-1998 (when “global warming” ceased) was exactly the same as the rate of warming during the 20 years 1860-1880 and the 30 years 1910-1940. During the earlier two periods, humankind could not have had any appreciable warming effect on the climate. Therefore, even if a mere warming were sufficient to engender more frequent or more intense hurricanes and other tropical storms, humankind has had very little to do with it.

My response to the Committee’s question was to cite the Accumulated Cyclone Energy Index, which is usually presented as a two-year running sum combining the frequency, duration, and intensity of all hurricanes, typhoons, and tropical cyclones around the globe. I am grateful to Ryan Maue of Florida State University for his recent graph demonstrating that the two-year running sum of the Accumulated Cyclone Energy Index is currently standing at its least value in a third of a century, indicating an exceptionally *low* level of hurricane and tropical storm activity –

Global tropical cyclone energy stands at its lowest for 33 years



Hurricanes hardly happen: The Accumulated Cyclone Energy Index is now at its least value in a third of a century, indicating that “global warming” over the same period has not led to the increase in hurricanes and other severe tropical storms that had been widely but baselessly predicted.

A forthcoming paper by Paul Maynard and me for the *Journal of the Chartered Insurance Institute of London* will show that insured financial losses attributable to hurricanes, when adjusted not only for

inflation but also for the very substantial growth of the population and infrastructure in harm's way, show – if anything – a falling trend throughout the 20th century.

Red Flag 32: During a break in the proceedings during which Congressmen were compelled to leave to attend to other business of the House, Mr. Karl told me he was surprised at my mentioning the Accumulated Cyclone Energy Index.

I responded that there had been no trend in the frequency of landfalling Atlantic hurricanes for at least a century, broadly confirming and extending the result demonstrated in Ryan Maue's graph *supra*. Mr. Karl protested that this was not the case, and showed me a graph which plotted not only the frequency of landfalling Atlantic hurricanes over 150 years but also the frequency of severe Atlantic tropical storms.

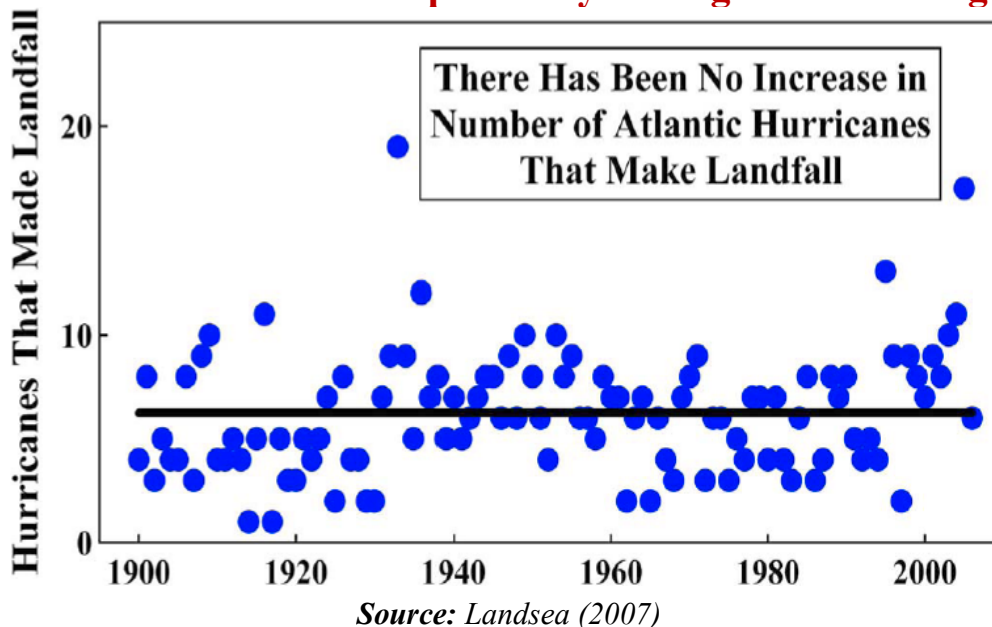
I pointed out – and Mr. Karl was compelled to concede – that his own graph showed that, as I had said, there had indeed been no trend in the frequency of landfalling Atlantic hurricanes over the entire 150-year period of his graph.

Mr. Karl then said that, nevertheless, the number of intense Atlantic storms had increased markedly over the 150-year period. I pointed out that during the first 120 years there had been no satellites, so it had not been possible to count most of the Atlantic storms.

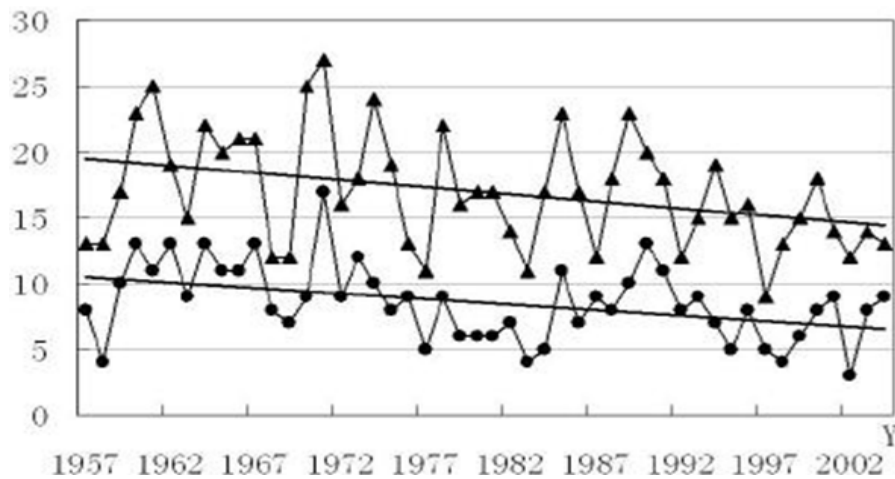
The data for landfalling hurricanes were reliable throughout the period because one did not need a satellite to discern whether the coastline had been struck by a hurricane.

Red flag 33: The following graphs – some based on data from the NCDC, of which Mr. Karl is the Director, demonstrate that, despite frequently-repeated claims that “global warming” has been making tropical storms more frequent or more intense, if anything the warmer weather has resulted in fewer and less intense storms, in part because the temperature differentials that cause storms diminish with warming

No hurricane trend despite 100 years' 'global warming'

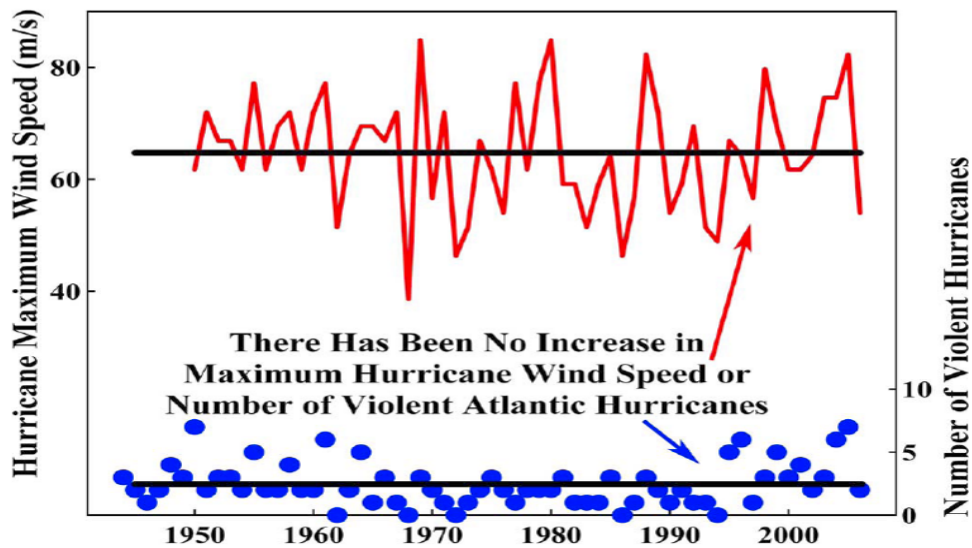


Fewer typhoons (top) and tropical cyclones (bottom)



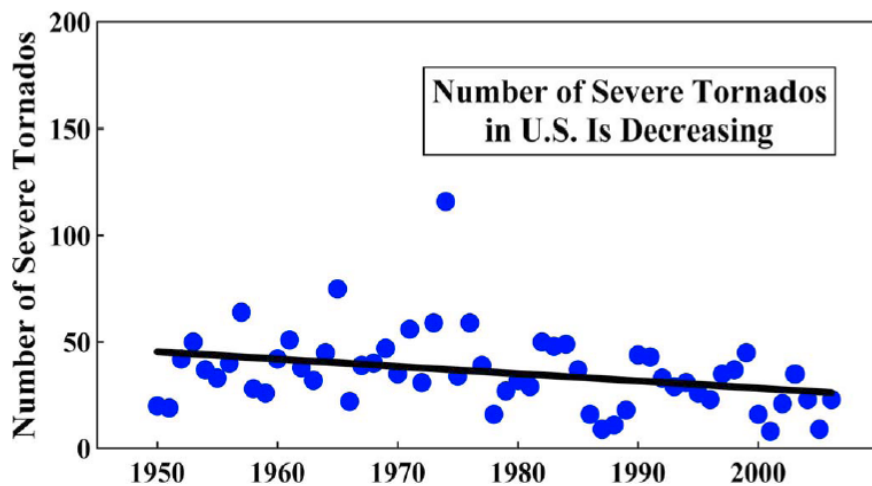
Source: Ren et al. (2006)

No increase in high wind-speed or violent hurricanes



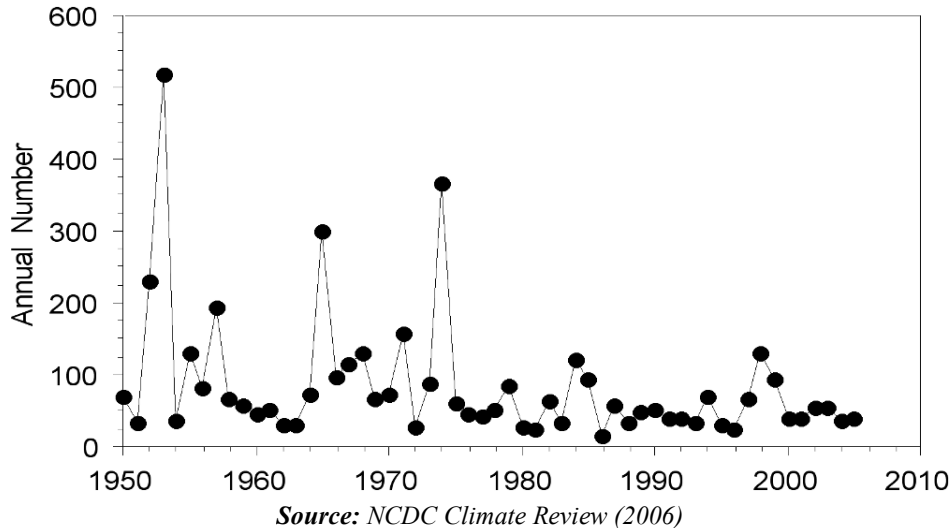
Source: Robinson, Robinson & Soon (2007)

Fewer severe tornadoes in the US



Source: NCDC Climate Review (2006)

Fewer deaths from tornadoes in the US



The Committee's further concerns about the impacts of "global warming"

During the hearing, I noted some of the principal concerns about the impacts of "global warming" that were raised by Hon. Members of the Committee. I shall address these concerns. First, it should be self-evident that if, as the theory suggests and the satellite data demonstrate, the amount of warming to be expected as a result of atmospheric CO₂ enrichment is approximately an order of magnitude less than the UN's models predict, none of the disasters, catastrophes, cataclysms, and Apocalypses luridly specified by Mr. Karl and imagined by some Hon. Members will come to pass.

Red flag 34: Schulte (2008), in a review of 539 papers published since January 2004 and containing the search term "global climate change" found that not one paper offered any evidence to the effect that "global warming" would prove to be "catastrophic" in any particular. That is the true scientific consensus. Yet the scientific-technological elite continues to tell politicians that catastrophe is just around the corner.

Chairman Markey said that "global warming" was "getting worse". Since there has been global cooling for seven years, definitively established by all four of the principal global-temperature datasets both individually and collectively, that proposition is erroneous. Furthermore, though *emissions* of carbon dioxide are greater than the UN had predicted, the growth in CO₂ *concentration* is well below the least of the UN's projections.

Red flag 35: Chairman Markey also said that sea level would rise, and would in particular swamp the Maldives. However, in recent years the Maldives have been subjected to a more thorough sea-level analysis than almost anywhere else on Earth, by a talented multi-disciplinary team under Professor Nils-Axel Moerner, the world's ranking expert on sea-level rise, who has written 520 peer-reviewed papers on the subject. The early conclusions of that continuing research, published in 2004, demonstrated that there had been no net sea-level rise in the Maldives for 1250 years. In any event, corals are capable of growing towards the light at ten times the most rapid rate of sea-level rise, which is why it is no mere coincidence that many coral atolls are only a few feet above sea level today, notwithstanding that sea level has risen by 400 feet over the past 10,000 years.

Red flag 36: Sea-level rise is often cited as the most severe consequence of "global warming". In reality, however, sea level is rising at a mere 8-12 in/century, about one-fifth of the mean centennial rate of rise of

4ft/century over the past 10,000 years. There is little sign of acceleration in this rate: indeed, in the past three years there has been no statistically-significant rise in sea level at all (JASON satellite data, 2009).

Red flag 37: Nor is there a shred of evidence that sea level will imminently rise by 20 ft, as suggested by Al Gore in 2005. Gore cannot have believed his own prediction: that year he bought a \$4 million apartment in the St. Regis Tower, San Francisco, just feet from the ocean at Fisherman's Wharf. As the London High Court bluntly found in 2007, "The Armageddon scenario that he depicts is not based on any scientific view."

Red flag 38: *A fortiori*, Dr. James Hansen's recent statements that "global warming" will raise sea level by 246 feet may be dismissed as mere rent-seeking rodomontade, tinged with hysteria at the continuing failure of his apocalyptic predictions. Professor Moerner told a recent debate on "global warming" at the University of St. Andrews that "sea level is not an issue". The undergraduates duly rejected a motion that "global warming is a global crisis". The UN has reduced its high-end projection of anthropogenic sea-level rise this century from 3 feet to less than 2 feet, with a central estimate of 17 inches. Moerner (2004) projects a sea-level rise of just 8 inches to 2100, similar to the sea-level rise that was observed in the 20th century.

Certain coastlines may be affected by regional tectonic subduction and other factors that cause the land to subside. These coastlines include that of Chesapeake Bay and of Louisiana. It is important, therefore, to distinguish carefully between components of sea-level rise – the component that arises from the long-run natural warming trend, the very much lesser component that arises from anthropogenic "global warming" even if the UN's exaggerated climate-sensitivity estimates are correct, and the regionally substantial component that may arise from changes in land surface levels. It is neither prudent nor scientifically justifiable merely to ascribe every encroachment by the sea on to the land to "global warming".

Representative Markey also mentioned the imagined threat from hurricanes. As I have established *supra*, the threat posed by hurricanes occurring more frequently because of "global warming" is more imagined than real.

Representative Upton said "climate change" was a "global problem" that required a "global solution". Climate has always changed, and will continue to do so. Anthropogenic climate change, however, is a non-problem that requires no solution.

Red flag 39: A Representative from Michigan expressed concern about "extinctions". More than 99% of all species that have ever lived became extinct through natural processes long before humankind ever walked the Earth. No one knows how many species there are, even to within three orders of magnitude. No one knows at what rate new species are coming into being, or at what rate old species are dying out. However, it is known that most species on Earth live in the tropics, where it is warm, and fewer than 1% live at the poles, where it is cold. It is cold, not warmth, that causes extinctions. The planet has been 12.5 F° warmer than the present for almost the whole of the past 600 million years: yet we are here. Even if the warming projected by the UN were actually to occur (which it will not, or at any rate not by any human agency), it would be entirely within the natural variability of the climate over the past 10,000 years. The notion of mass extinctions arising from "global warming" is a baseless fantasy.

Representative Shimkus rightly pointed out that the Earth, compared with almost all of the past 600 million years, is currently "carbon-starved". Almost throughout the period since the Cambrian era, atmospheric carbon dioxide concentration has been at least twice what it is today, and has on occasion been 20 times what it is today. It is worth putting the anthropogenic increase in carbon dioxide concentration into perspective. The proportion of the atmosphere occupied by carbon dioxide has increased by just one part in 10,000 in the quarter of a millennium since 1750. That is all.

Red flag 40: A Representative from California spoke of floods and droughts. Once again, it is prudent not to attribute every natural disaster to “global warming”: indeed, it has been pointed out repeatedly by the IPCC that it is not possible to attribute *any* particular natural disaster to “global warming”. The droughts of the American Great Plains in the early part of the 20th century were far worse than anything that has been seen since: one has only to read John Steinbeck’s *The Grapes of Wrath* to appreciate how harsh conditions were then. Likewise, flooding such as the recent floods on the Red River has had many precedents early in the 20th century. Such extreme events are no more common than they were, but they affect more people as population and infrastructure grows, and there is greater awareness of them thanks to the instant television reporting that is available today. It is all too easy to confuse matters and assume that a greater awareness of widely-reported natural disasters indicates that their frequency or severity has increased, when if anything it has diminished.

Red flag 41: A second Representative from California said that infectious diseases would spread because of “global warming”. However, as Professor Paul Reiter of the Institut Pasteur has repeatedly pointed out, most of the diseases that are described as “tropical” occur in the tropics solely because bad government and poor public health measures facilitate transmission. To take one example: the *anopheles* mosquito that carries the *plasmodium* parasite that causes malaria requires a minimum temperature of 60 °F during its short breeding season, but is otherwise well capable of surviving Arctic temperatures. The largest outbreak of malaria in modern times occurred in the 1920s in Siberia, not noted for its tropical climate. Some 13 million people were infected; 600,000 died; and 30,000 of the deaths occurred in the Arctic sea-port of Arkhangelsk. There is no basis for the frequent assertion that warmer weather will spread tropical diseases.

The principal reason for the 40 million excess malaria deaths that have occurred in the past 40 years was the scientifically-unfounded decision – by precisely the rent-seekers who now cry “Wolf!” about “global warming (the Environmental Defense Fund, the Environmental Protection Agency, for example) – to ban DDT, the only effective agent against the anopheline mosquito. Dr. Arata Kochi, of the World Health Organization, announcing the official end of the DDT ban on 15 September 2006, said that in this field politics usually prevailed, but that the WHO were now going to take a stand on the science and the data, and were going to recommend DDT once again as the front line of defence against malaria.

Red flag 42: The Representative from California also mentioned drought in the Horn of Africa – a region that has long been prone to extreme drought. However, in the past 30 years the Sahara Desert, for instance, has shrunk by 300,000 square kilometers as vegetation has greened what was once a wasteland. Nomadic tribes have been able to return to lands they had not settled within living memory. Regrettably, the news media tend to comment only on the bad news, omitting the good news. This entrenched bias makes it easier for the wolf-criers to spread their false message of climatic alarm.

Red flag 43: A Representative from Louisiana implied that Hurricane Katrina was caused by “global warming”. It was in fact no more than a Category 3 hurricane when it made landfall. It did disproportionate damage not because of “global warming” but because of the failure of the local administration to put pressure on the Corps of Engineers to maintain the levees adequately. As noted *supra*, there is no basis for the assumption that “global warming”, if and when it resumes, will cause any appreciable increase in the frequency or intensity of tropical storms.

Red flag 44: The Representative from Louisiana also said that sea temperatures were increasing, leading to inundation of the Louisiana coastline. However, in the five years since the elaborate network of 3175 automated bathythermographs of the Argo project were deployed throughout the world’s oceans, there has been no statistically-significant rise in sea temperatures and, indeed, if anything there has been a slight fall. Sea temperatures have of course been many degrees warmer than the present for most of the past 600 million years. Inundation of the Louisiana coastline is not occurring because of sea-level rise but because of a regional subsidence of the coastline.

Red flag 45: A Representative from Wisconsin talked of the Red River flood in North Dakota. This flood cannot be attributed to “global warming”. Such events occur from time to time. She also mentioned that snowfall had been 40% higher this winter. On any view, the greater snowfall that accompanies a cold winter cannot be reasonably attributed to “global warming”.

A Representative from North Carolina said that global temperatures would continue to rise. First, they will have to stop falling. Though it is in general true that enrichment of the atmosphere with any heteroatomic gas such as carbon dioxide will be more likely than not to cause some warming, I have established *supra* that the amount of warming that is likely to occur is an order of magnitude less than the warming imagined by the UN, and is accordingly harmless and beneficial.

Mr. Karl’s testimony colourfully listed many imagined disasters arising from “global warming”. None of these disasters is likely to arise: for the effect of humankind on the climate is negligible.

Red flag 46: Mr. Schweiger’s testimony, on behalf of the National Wildlife Federation, talked of “unchecked” “global warming” (it has been in check for seven years), and said “global warming” was worse than expected (it cannot be, after seven years of global cooling that not one of the UN’s models had predicted).

Red flag 47: He also said that polar bears were threatened with extinction (there are five times as many of them as there were in the 1940s, hardly the profile of a species in imminent danger of extinction); that the “precautionary principle” should rule (but the “precautionary principle” must also be applied to the precautions themselves, otherwise disasters like the biofuel scam will kill millions by starvation, a killing that has already begun); and that there would be the “extinction of a million species” (a figure plucked from the air).

Mr. Waskow’s testimony said that reducing disaster risks “saves \$4 for every \$1 spent”. It might, in theory, do so, but only if there is some rational basis for assuming that a given category of disaster might actually occur. However, the influence of carbon dioxide on temperature is so small, as the temperature and long-wave radiation measurements conclusively demonstrate, that planning for “disaster” caused by “global warming” is a waste of time, labor, and taxpayers’ money.

Red flag 48: A Representative from California said that glaciers were in recession and that snowpack was in decline. Neither of these statements is in substance true. Most of the world’s 160,000+ glaciers are in Antarctica, and are too high in both latitude and altitude to be affected at all by “global warming”, particularly since Antarctica has been cooling for half a century (Doran *et al.*, 2002). A recent attempt to demonstrate that the cooling of Antarctica was really a warming was produced by the same scientists who had attempted to abolish the medieval warm period, and by similarly questionable methods. The 9575 glaciers that debouch from the Himalayas into India are following a pattern of advance and recession that shows no significant change in the 200 years since the Raj first kept records (Professor M. I. Bhat, Indian Geological Survey, personal communication, 2007).

Red flag 49: The Furtwangler glacier at the summit of Mt. Kilimanjaro, a poster-child for “global warming” alarmism, has been receding since at least 1880, and half of its ice had disappeared before Hemingway wrote *The Snows of Kilimanjaro* in 1936. In 30 years of satellite monitoring, the temperature at the summit of Kilimanjaro has never risen above -1.6°C , with a mean of -7°C (Molg *et al.*, 2003). The glacier has not, therefore, been melting because of “global warming”: it has been ablating (passing directly from the solid to the gaseous state of water) because of regional cooling, combined with desiccation of the atmosphere accelerated by imprudent post-colonial deforestation in the region.

Most other mountain glaciers worldwide have been receding since at least 1880 at a near-linear rate, with little or no evidence of recent acceleration in the rate of recession. In the tropical Andes, all but the very highest peaks in the Cordillera de Merida were ice-free throughout most of the past 10,000 years, but there is now more ice than usual (Polissar *et al.*, 2006). In the Alps, recent glacial recession has revealed mountain roads, forests, and even an entire medieval silver-mine that were covered by snow, firn, and eventually ice as the Medieval Warm Period gave place to the Little Ice Age. In Greenland, some glaciers are receding and others are advancing, much as they have since ice began to accumulate there 850,000 years ago. The Viking burial-ground at Hvalsey, the largest medieval settlement on Greenland, is under permafrost today: it was not under permafrost when the Vikings were buried.

Red flag 50: Finally, Representative Inslee, supported by one or two members of his party, said that ocean acidification was becoming a problem and asked me whether I was concerned about it. There is no need for concern: carbon dioxide concentration has been at least 1000 ppmv (compared with <400 ppmv today) for most of the last 600 million years, without ill effects on marine life.

Indeed, the calcite corals first appeared in the Cambrian era, when carbon dioxide concentration was 7000 ppmv (IPCC, 2001); and the more delicate aragonite corals first appeared in the Triassic era, when the concentration was 6500 ppmv (IPCC, 2001). Representative Inslee said the corals had now become accustomed to low concentrations of carbon dioxide and would be unable to adapt to increasing acidification of the oceans. However, he did not adduce any scientific data to back this insupportable assertion.

The biochemistry of bicarbonate ions is such that powerful homoeostatic mechanisms, some of them only recently discovered, prevent acidification of the oceans. Indeed, even the most imaginative models (in the absence of the worldwide monitoring and sampling over time that would be necessary to arrive at a fair empirical result) do not find that the reduction in ocean alkalinity (the ocean remains safely alkaline) is more than about 0.1 acid/base units. Without objection, Representative Inslee agreed that I might enter into the record a short book written by my distinguished friend Dr. Craig Idso, summarizing the extensive literature that gives the lie to the notion that “ocean acidification” is a real danger. It is not.

Conclusion

The evidence that I have adduced in this letter confirms that the three graphs that I presented in my testimony before the Committee demonstrate what I had said they demonstrated that –

- **Global mean surface temperature** has indeed been declining for seven years on all measures, wiping out one-third of the warming that had occurred over the previous 30 years;
- **Atmospheric carbon dioxide concentration** is no longer rising exponentially, as predicted by the UN, but linearly, and at a rate well below the least of the UN’s projections, requiring that all of the UN’s temperature projections to 2100 be approximately halved; and
- **The diminution in outgoing long-wave radiation over time** is one-seventh to one-tenth of that which the UN’s models predict, demonstrating that the UN has overstated climate sensitivity sevenfold to tenfold, and that it has overstated the projected anthropogenic temperature increase in the 21st century by as much as sixteenfold.

The UN has reached this sixteenfold exaggeration of the effect of rising CO₂ concentration on temperature inadvertently, by doubling the true values of four parameters that are then multiplied together in the models to yield the projected anthropogenic temperature increase to the year 2100.

Without this prodigious and unfortunate exaggeration (and even if *per impossibile* it were to come to pass), not one of the catastrophes imagined by several witnesses and by certain Hon. Members on the Committee will be at all likely to occur.

There was no “climate crisis”; there is no “climate crisis”; there will be no “climate crisis”. The right response to the non-problem of “global warming” is to have the courage to do nothing.

You are the guardians of the public purse: do not loose the purse-strings too readily when the scientists cry “Wolf!”

The measures that your Administration currently proposes by way of addressing the non-problem of “global warming” might have been calculated to do maximum damage to the very poorest voters – those who depend upon the taxes of the prosperous for their very survival; those in low-paid jobs in heavy industries that are heavy emitters; those who run the Mom-and-Pop enterprises that are tomorrow’s big businesses; those low-income families who pay a disproportionately large proportion of their income to energy providers.

Rightly, one of the Administration’s own supporters on your Committee has stated that the principal purpose of “cap-and-trade” is not to “Save The Planet” – which it would not do even if it worked – but to raise revenue. If you wish to raise excessive revenue, be honest about it. Say that you intend to tax and tax and tax again. But desist from claiming that you are raising the revenue with the aim of preventing “climate crisis”. Already, every opinion poll demonstrates that, notwithstanding the most lavishly-funded propaganda campaign by the *classe politique* since Goebbels tried to make Nazism look good, the people are not buying the “global warming” scare any more.

Already, millions face death by starvation, not because of “global warming” (for warmer weather saves lives, while cold weather kills), but because of the misplaced fear of “global warming” that a few malicious and ill-intentioned members of the scientific-technological elite have fraudulently engendered, with the acquiescence of a cloud of what Lenin called “useful idiots” among the academic community who have found it expedient to drift along with the scare by not looking too closely at any of the facts.

The facts are what I have given you in this letter. You need not believe a word I say: for every fact I have given you is taken from the peer-reviewed scientific literature or from the plentiful scientific data that are publicly available. Why not verify what I have said – perhaps by the simple expedient of directing some well-targeted questions at the IPCC?

Thus far, you have accepted what it says, either because maintaining that “global warming” is a “global crisis” is politically expedient, congenial, or convenient, or because you are impressed by the IPCC’s reputation. The fallacy of reputation – the *argumentum ad verecundiam* – is one of the well-worn, Aristotelian fallacies of logic. No sound conclusion can be founded upon it. Bernie Madoff had a reputation. He was one of the five founders of NASDAQ. Yet the report identifying some 30 red flags in his pattern of trading was ignored for years by the SEC. Why? Because, as the *classe politique* so often does, it fell for the *argumentum ad verecundiam* rather than getting someone to check out the red flags.

You have been fairly and clearly warned that a single penny more spent on “global warming” would be a penny wasted. Your nation faces many formidable economic problems. Economic problems tend to hit the poor harder than the rich. Do not divert any more of your nation’s shrinking capital towards the further enrichment of the scientific-technological elite that has exploitatively abused its *verecundia* and your population’s ignorance of science for the sake of its own enrichment – an enrichment that is ultimately and chiefly at the expense of the poor.

I am concerned at the very large number of red flags, indicating the need for further investigation to prevent irregularities, inaccuracies, or exaggerations, that have been thrown up by this single Committee hearing. It is right, therefore, that I should warn the Committee in the plainest terms that numerous powerfully-placed rent-seekers among what Eisenhower called “the scientific-technological elite” appear to be systematically and deliberately overstating the minimal consequences of the minimal warming that is likely to occur.

For convenience, I now enumerate the 50 red flags mentioned in this letter. In each case I indicate the question or questions requiring further investigation to which the red-flagged irregularity gives rise. I should make it plain that, in each instance where it appears that a member of the Committee has been misled, I am not asserting or implying that that Hon. Member is in any way guilty of or complicit in any fraud: merely that he or she has been misled by others who may or may not themselves have deliberately intended to mislead the House.

Red Flags

1. Global temperature has been falling rapidly for seven full years: however, this fact appears to have been kept from the Committee, and the director of an agency whose own global-temperature dataset clearly shows the seven-year decline repeatedly failed to admit when questioned by the Committee that there have indeed been seven full years of global cooling, raising the question why, on the central issue of the rate at which “global warming” is or is not occurring, the official was reluctant to admit the seven-year cooling that his own agency’s global-temperature dataset plainly shows.
2. The same official sought to maintain that the methods I had used might not be appropriate for demonstrating that there had been seven years’ cooling, when in fact all four of the global-temperature datasets that had been combined to generate the dataset plotted in my temperature graph had shown the seven-year cooling, raising the question why the official was reluctant to admit that, on all individual measures and accordingly on all measures combined, global temperature has been falling rapidly for seven years.
3. The global-temperature dataset of the National Climatic Data Center shows global cooling at a rate little more than one-third of that shown by the other three datasets, raising the question whether there is a methodological bias either in the NCDC’s dataset or in the other three datasets.
4. The raw GISS temperature data for the Santa Rosa automated temperature reporting station show a century of falling temperatures, while the adjusted data show a century of rising temperatures, at least in part because 70-year-old temperature records have been amended, raising the question why long-established historical temperature data have been altered many decades *ex post facto*.
5. The adjusted global GISS temperature data for 2008, when compared with the adjusted global GISS temperature data for 1999, show that 70-year-old temperature records have been adjusted more substantially in 2008 than in 1999, raising the question whether the data-tampering at individual stations has increased over time, with the intention of making the 20th-century temperature increase appear substantially greater than it was.
6. The senior official who appeared before the Committee said that if the past seven years’ cooling had occurred it had occurred partly because of a cooling event, the La Nina phase of the El Nino Southern Oscillation, that had endured for three years, when his own agency’s global-temperature dataset showed that it had endured for just six months and no dataset showed it persisting for more

than one year, raising the question why the official had overstated the impact of the La Nina cooling event on the global cooling of the past seven years.

7. The same official said that the global cooling of the past seven years, if it had occurred, was a consequence of natural variability in the climate, raising the question why the official did not also say that the warming of the preceding 300 years might also have been attributable to natural variability.
8. The same official said that 13 of the past 14 years had been the warmest on record, but his own agency's record (which dates back only to 1880) shows only 12 of the past 14 years as being the warmest on record, raising the question why the official regarded the cluster of recent warm years as evidence of anthropogenic warming rather than as continuing evidence of the past 300 years' natural warming.
9. A graph relied upon by the UN's climate panel in its 2007 report, and in a recent lecture by the panel's chairman, Dr. Rajendra Pachauri, and by the US Environmental Protection Agency in the Technical Support Document in support of its forthcoming "Endangerment Finding" against carbon dioxide and five other heteroatomic gases, uses the endpoint fallacy, raising the question whether their conclusion that the rate of "global warming" accelerated between 1850 and 2005 is unscientific and improperly motivated.
10. In one of nine serious "errors" identified by a UK High Court Judge in Al Gore's movie *An Inconvenient Truth*, it is suggested that in the palaeoclimate it was CO₂ concentration that changed before global temperature, when in fact it was temperature that changed before CO₂ concentration, raising the question why Congress (and Her Majesty's Government) still treats Gore as though he were a ranking expert on "global warming".
11. The IPCC's 1990 report showed a graph demonstrating that the medieval warm period was warmer than the present, but the 2001 report showed a graph suggesting that the warm period was cooler than the present, raising the question of the extent to which the imagined "consensus" on "global warming" agrees with itself.
12. The IPCC's purported abolition of the medieval warm period depended critically upon proxies for pre-instrumental temperature derived from the width of tree-rings in bristlecone pines, previously stated by the IPCC to be unsuitable because the tree-rings widen not only when it is warmer but also when it is moister and particularly when there is more carbon dioxide in the atmosphere, raising the question why the IPCC chose to accord to a graph based on a methodology that it had previously found unsound the unique privilege of being reproduced six times at full scale and in full color in its 2001 report.
13. For many years the compilers of the defective graph on which the UN relied refused outright to part with their computer programs or data, raising the questions whether they did not wish their data or methods to be scrutinized by other scientists, and whether it should be a precondition of taxpayer-funded research grants that all methods, programs and data are made publicly available at the time of publication.
14. A proxy data series that appeared to indicate that the present was warmer than any previous period in the past 600 years was given 390 times the weight of a data series that appeared to show the medieval warm period was warmer than the present, raising the question whether the two data series were objectively weighted.

15. The computer program that calculated the graph relied upon by the IPCC in its 2001 report generated graphs indicating that the present is warmer than any previous period in the past 600 years, even when random red noise rather than genuine proxy temperature data was input to the program, raising the question whether the program had been tuned to bias the results so as to overemphasize the comparative magnitude of recent warming.
16. The US Environmental Protection Agency, in the Technical Support Document underlying its “Endangerment Finding” in respect of CO₂ and five other heteroatomic gases, will rely upon a graph showing four datasets from papers by the authors of the proven-defective 600-year northern-hemisphere temperature graph that appeared in the IPCC’s 2001 report, and those authors’ associates, to show that the medieval warm period was not as warm as the present, raising the question why the EPA has chosen to overlook papers over the past 25 years by at least 670 scientists from 391 institutions in 40 countries confirming the historical record to the effect that the medieval warm period was real, global, and warmer than the present.
17. The Wegman report commissioned for the House noted a suspicious spate of papers apparently confirming the results of the authors of the defective graph that purported to abolish the medieval warm period, raising the questions why almost all of the papers were at odds with the established literature on the temperatures prevalent over the past 600 years, and why almost all of the papers were written by associates of the authors of the defective graph.
18. For fully seven years the increase in atmospheric carbon dioxide concentration has been linear and not (as predicted) exponential, and has been well below the least of the IPCC’s predictions for the “business-as-usual” scenario A2, raising the questions why the IPCC cannot (as it admits) add up the atmospheric “carbon budget” to within a factor of two, and why its prediction of this central quantity is so greatly exaggerated.
19. The senior official who testified before the Committee, commenting on the graph showing CO₂ concentration rising at well below the least of the IPCC’s predictions, said that CO₂ emissions were rising at well above the greatest of the IPCC’s predictions, raising the question why he did not admit that it is the *concentrations* of CO₂ remaining in the atmosphere, not the *emissions*, that influence global temperature.
20. Satellite observation demonstrates that the diminution over time in outgoing long-wave radiation from the Earth’s surface is one-seventh to one-tenth of what the models relied upon by the IPCC predict, raising the questions whether global-temperature response to atmospheric enrichment with carbon dioxide has been overstated sevenfold to tenfold, and why the senior official who testified before the Committee attributed the observational results merely to orbital degradation of the satellites.
21. A paper by Svante Arrhenius (1896), in which it is concluded that in response to a doubling of atmospheric carbon dioxide concentration global temperature will increase by some 5 Celsius degrees (9 Fahrenheit degrees), is frequently cited by Al Gore, Sir David King, and other supporters of the “official” position on “global warming”, raising the question why they do not also cite Arrhenius’ reconsideration of the matter in a paper of 1906, in which – after the Stefan-Boltzmann radiative-transfer equation had become available to him and had enabled a considerable simplification of the calculation – he concluded that temperature response would be not 5 Celsius degrees but just 1.6 Celsius degrees (2.9 Fahrenheit degrees).
22. The IPCC’s central estimate of temperature response to doubling carbon dioxide concentration was 3.8 Celsius degrees in 1995; 3.5 in 2001; and 3.26 in 2007, raising the questions whether the

“consensus” on this central issue agrees with itself, and how much further the central estimate of climate sensitivity must fall before it accords with both theory and observation.

23. The IPCC’s method of calculating temperature increase in response to a given proportionate increase in atmospheric carbon dioxide concentration involves multiplying together four quantities not one of which can be definitively established either by theory or by observation and experiment, raising the question whether small overstatements of the values of each of the four quantities on the part of the IPCC have led to a large exaggeration of the temperature response to atmospheric enrichment with carbon dioxide.
24. Though climate sensitivity is the central issue in the debate over the magnitude of the supposed influence of humankind over the climate, the IPCC’s 2001 and 2007 reports do not deal with it at the outset, and its consideration of the four key parameters whose product is anthropogenic temperature increase is scattered among different chapters or sub-chapters written by different authors, raising the questions whether the obscurantism in the IPCC’s treatment of this central issue is deliberate, and whether any of the individual contributors to or reviewers of the IPCC’s climate assessment reports realize how prone the IPCC’s methodology is to very large exaggerations of climate sensitivity.
25. The models relied upon by the IPCC predict that the warming rate in the tropical mid-troposphere will be thrice the surface warming rate, raising the question why the predicted differential in warming rates has never been observed in 50 years of radiosonde and drop-sonde measurements and in 30 years of satellite observations.
26. The absence of the model-predicted tropical upper-troposphere “hot-spot” requires climate sensitivity to be divided by at least 3, raising the question whether the IPCC has greatly exaggerated the radiative forcing that is thought to arise from atmospheric enrichment with heteroatomic gases such as carbon dioxide.
27. Between the 70-year solar Grand Minimum of 1645-1715, when the Sun was less active than for 10,000 years, and the 70-year solar Grand Maximum of 1925-1995, when the Sun was at least as active as it had been for 11,400 years, solar activity increased rapidly, raising the question whether the IPCC has underestimated the influence of the Sun in causing the 300 years’ warming that ended in 1998.
28. The IPCC uses a value for the Planck parameter that is higher than any other in the mainstream scientific literature, raising the question whether it is justified in repealing the fundamental equation of radiative transfer by taking the temperature and radiant-energy inputs to the Planck parameter from planetary emitting surfaces six miles apart.
29. The IPCC imagines that temperature feedbacks more than triple the radiative forcing from atmospheric enrichment with heteroatomic gases, raising the question whether it has overstated the values of certain feedbacks, particularly the water-vapor feedback and the cloud-albedo feedback.
30. The apparent exaggeration by the IPCC of all four of the parameters whose product is anthropogenic temperature increase raises the question whether it has exaggerated that temperature increase as much as sixteenfold.
31. The senior official who testified before the Committee said there had been an increase in the number of tropical storms in the Atlantic over the past 150 years, raising the questions whether the data are sufficient to establish that conclusion given that satellite observation has only been

available for 30 years, and why the official did not mention that the number of Atlantic hurricanes that make landfall has shown no trend in 150 years.

32. The senior official who testified before the Committee challenged my use of the Accumulated Cyclone Energy Index, which has just recorded its lowest value in the 30-year satellite record, raising the question why he considered it inappropriate to rely upon the two-year running sum of the combined frequency, duration, and intensity of all hurricanes, typhoons, and tropical cyclones worldwide.
33. The data show that the frequency of typhoons and tropical cyclones has declined throughout the 30-year satellite record; that for 60 years there has been no increase either in maximum wind-speed or in the number of violent Atlantic hurricanes; that for 60 years the number of severe tornadoes in the US has been falling; and that for 60 years the number of deaths from US tornadoes has been falling, raising the question why the official did not consider any of these data relevant enough to bring to the Committee's attention in response to its question about hurricanes and other intense storms.
34. The senior official who testified before the Committee said in his testimony that "global warming" would cause various catastrophes, including sea-level rise, ocean acidification, changes in rainfall, increased frequency and intensity of extreme-weather events such as heatwaves, coastal storms, droughts and heavy downpours, coastal erosion and inundation, changes in crop yields and ocean productivity and in climate-related diseases and pests, raising the question why he did not cite Schulte (2008), who found that of 539 papers containing the search phrase "global climate change" and published since the beginning of 2004 not one had offered any evidence for any catastrophe arising from "global warming".
35. Professor Nils-Axel Moerner, who has published 520 papers on sea-level rise, concluded in a 2004 study of the Maldives that there had been no sea-level rise there for 1250 years, and that global sea level in the 21st century would rise by 8 inches, as it did in the 20th century, raising the question how the chairman of the Committee had been misled – perhaps by officials – into the belief that sea-level rise, particularly in the Maldives, would be likely to occur in a dangerous degree as a result of "global warming".
36. The senior official who testified before the Committee said that sea-level rise would be a problem because of "global warming", raising the question why he did not tell the Committee that there has been no statistically-significant sea-level rise for three years, and that sea level has risen in the past 16 years at a rate equivalent to no more than 1 ft/century.
37. In 2005, in *An Inconvenient Truth*, Al Gore predicted that sea level would rise imminently by 20 feet, inundating coastlines worldwide, leading a UK High Court Judge to find that "the Armageddon scenario that he depicts is not based on any scientific view", raising the question why in 2005 he spent \$4m on a condo in the St. Regis Tower, San Francisco, just feet from the ocean at Fisherman's Wharf.
38. In 2009, Dr. James Hansen of the Goddard Institute for Space Studies wrote that sea level would rise by 246 feet (75 meters) as a result of "global warming", raising the question why exaggerations such as this are becoming ever more flagrant while sea level is not rising at all.
39. The proportion of the atmosphere occupied by carbon dioxide has increased by little more than 1 part in 10,000 over the past 250 years, raising the question how a member of the Committee had been misled into believing that "global warming" might lead to mass extinctions.

40. The IPCC has repeatedly stated that individual extreme-weather events cannot be attributed to “global warming”, and the droughts of the Great Plains, and the great US floods, in the first half of the 20th century were worse than anything seen since, raising the question how a member of the Committee had been misled into believing that particular droughts or floods could be attributed to “global warming”.
41. Most “tropical” diseases occur in the tropics not because the weather is warm but because public health measures are poor, and, in particular, it is known that the malaria mosquito can survive in Arctic temperatures, and that the largest outbreak of malaria in modern times occurred in Siberia, killing tens of thousands in the Arctic, raising the question how a member of the Committee had been misled into believing that “global warming” might facilitate the transmission of “tropical” diseases.
42. The Sahara has shrunk by 300,000 square kilometers in the past 30 years as vegetation has greened what was once a wasteland, allowing nomadic tribes to return to lands they had not settled in living memory, raising the question how a member of the Committee had been misled into believing that drought in the Horn of Africa (where drought is permanent) could have been caused by “global warming”.
43. Hurricane Katrina was a Category 3 storm when it made landfall, and the damage it did was caused by the failure of the New Orleans levees, raising the question why a member of the Committee had been misled into sharing Al Gore’s view, condemned by a UK High Court Judge as baseless, that Hurricane Katrina was attributable to “global warming”.
44. The 3175 automated bathythermographs of the Argo network, deployed throughout the world’s oceans in 2003, have shown that in the past five years there has been a slight cooling of the oceans, raising the question how a member of the Committee had been misled into believing that the oceans had been warming and might lead to inundation of the Louisiana coastline, where subsidence of the land rather than rising sea level is known to be the cause of coastal inundation.
45. Increased snowfall cannot reasonably be attributed to “global warming”, raising the question how a member of the Committee had been misled into believing that a 40% increase in snow cover in North Carolina this winter was attributable to “global warming”, particularly when there has been a seven-year period of global cooling.
46. Global temperatures have been falling for seven years, and the rate of increase in carbon dioxide concentration in the same period has been well below the least of the IPCC’s projections, raising the question why the representative of the National Wildlife Federation told the Committee that “global warming” is “worse than expected”.
47. Polar bears evolved 200,000 years ago from land-based brown bears and, therefore, survived the last interglacial period 125,000 years ago, when global temperatures were 11 Fahrenheit degrees warmer than the present, and their population has quintupled since the 1940s, for it is hunting that was the real threat to them and that is now controlled, raising the question why the representative of the National Wildlife Federation told the Committee that polar bears were threatened with extinction.
48. Most of the world’s 160,000+ glaciers are in Antarctica, at altitudes and latitudes too high to be affected by “global warming”, and Antarctica has cooled for half a century, and the 9575 glaciers that debouch from the Himalayas into India show no change in the pattern of advance and recession in the 200 years since the Raj first monitored them, raising the question how a member of the Committee was misled into believing that “global warming” is causing glacial recession and

decline in snow cover, which has shown no trend in half a century and reached a record high extent last winter.

49. The summit glacier of Kilimanjaro has not been melting because of “global warming” but ablating because of regional cooling and imprudent postcolonial deforestation, raising the question why Al Gore blames the recession of the glacier (half of which had already receded before Hemingway wrote *The Snows of Kilimanjaro* in 1936) on “global warming”, a conclusion with which a UK High Court Judge has disagreed.

50. Carbon dioxide concentration has been up to 20 times today’s levels in the palaeoclimate, and yet the creatures of the ocean survived and flourished, which they could not have done if the higher carbon dioxide concentration had appreciably acidified the oceans, raising the question how a member of the Committee had been misled into believing that current geologically-low concentrations of carbon dioxide could cause any appreciable or dangerous acidification of the oceans, which remain pronouncedly alkaline and contain 70 times as much carbon dioxide as the atmosphere.

Recommendation

At root, all of the red-flagged irregularities, errors, and exaggerations identified herein have their origin in the IPCC’s central exaggeration of the four parameters whose product is the temperature response to anthropogenic increases in carbon dioxide concentration.

I recommend, therefore, that the Committee should consider again, and carefully, the question whether the anthropogenic effect on global mean surface temperature has – albeit inadvertently – been considerably exaggerated. Upon this question all else depends. If climate sensitivity is as low as theory and the satellite data are agreed in showing it to be, then that is the end of the “climate crisis”, and it would be foolish to spend trillions on addressing a non-problem when there are so many real problems that need to be addressed.

I shall be happy to answer any further questions from the Committee if required.

With all good wishes,

MONCKTON OF BRENCHLEY

Attached: Technical paper on verification of IPCC projections, as promised to Representative Barton during the hearing.

Climate trends reconsidered

Christopher Monckton of Brenchley

ABSTRACT

MONTHLY verification of officially-predicted global trends in CO₂ concentration and surface temperature against observational data is proposed. Predictions to be verified are described, data sources assessed, methodologies outlined, simplifying equations justified, and results presented. CO₂ concentration, officially predicted to rise exponentially to 836 [730, 1020] ppmv by 2100, is now rising linearly towards ~570 ppmv by 2100. Therefore, unless concentration growth accelerates, warming to 2100 will be half of the official central estimate. Temperature, officially predicted to rise at a rate equivalent to 2 C°/century to 2020 and by 3.26 [2.0, 4.5] C° at CO₂ doubling, equivalent to 3.6 [1.1, 6.4] C°/century by 2100, has risen at 1.5 C°/century since 1980, but has fallen at 2 C°/century since late 2001. The officially-estimated difference between centennial-scale transient climate sensitivity and equilibrium climate sensitivity appears to be ≤0.5 C°.

INTRODUCTION

REGULAR, transparent, objective, empirical, assessments of official predictions about climate change are necessary but not generally available. Therefore, simple benchmarks are proposed, to assess against observational data the predictions upon which the case for urgent mitigation of anthropogenic “global warming” rests. “Prediction” and “projection” are treated as synonymous.

The central official predictionⁱ is that climate sensitivity – equilibrium global mean surface temperature response $\Delta T_{S,2x}$ to CO₂ doubling – will significantly exceed the 1.5-1.6 C° given by Arrhenius (1906)ⁱⁱ –

$$\Delta T_{S,2x} = [4.7 \pm 1] \ln 2 = 3.26 [\pm \ln 2] \text{ C}^\circ. \quad (1)$$

In the methodology of the UN Intergovernmental Panel on Climate Change, climate sensitivity – temperature response ΔT_S to an external perturbation such as anthropogenic greenhouse-gas enrichment – is the product of –

- Direct radiative forcings ΔF ;
- The zero-feedback climate-sensitivity parameter κ ; and
- Temperature feedbacks encompassed in the feedback multiplier f , such that –

$$f = (1 - b\kappa)^{-1}, \quad (2)$$

where b is the sum of all positive and negative temperature feedbacks, which are then mutually amplified via eqn. (2), the Bodeⁱⁱⁱ linear feedback-amplification equation. Thus the climate-sensitivity equation is –

$$\Delta T_S = \Delta F \kappa f = \Delta F \kappa (1 - b\kappa)^{-1}. \quad (3)$$

None of the three key parameters ΔF , κ , f can be definitively evaluated by theoretical demonstration, directly measured by instrumentation, or reliably inferred by experimentation (Monckton, 2008)^{iv}. Official predictions of climate sensitivity, therefore, being reliant near-exclusively on numerical modeling, cannot be Popper-falsified. To this extent, the anthropogenic-warming contention is untestable, does not qualify as a hypothesis and, *stricto sensu*, is not of interest to science.

However, the UN's climate panel, the IPCC, has been in existence for 20 years – a sufficient period to verify by observation the extent to which the climate predictions upon which its central contention is founded are proving accurate.

The proposed benchmarks are intended to be transparent, with methodologies fully disclosed and demonstrated; objective and hence trustworthy; empirical, based on observational data; and updated monthly, to provide policymakers with reliable data that are not now available. The benchmarks and data are displayed graphically, so that scientifically-inexperienced policymakers may verify by eye the reliability of official projections of CO₂ concentration increase and of consequent warming.

Changes in global atmospheric CO₂ concentration and surface temperature are considered here, but consequences of warming, such as changes in mean sea level, in global sea ice extent, and in global tropical-cyclone activity, are not considered.

CHANGE IN GLOBAL CO₂ CONCENTRATION

Pre-industrial CO₂ concentration is thought to have been ~278 ppmv (IPCC, 2007)^v. Since March 1958, a monthly index of CO₂ concentration has been compiled using gas chromatography at the Mauna Loa Observatory (Keeling & Whorf, 2004)^{vi}. The earliest readings showed CO₂ concentration at ~315 ppmv.

By late 2008, according to NOAA's global index of atmospheric CO₂ concentration^{vii}, the proposed observational data source for CO₂ changes, the concentration had risen to ~385 ppmv, rising near-linearly since late 2001 at ~200 ppmv/century.

IPCC (2007) bases its climate predictions on six standard "emissions scenarios" (B1, A1T, B2, A1B, A2, A1F1: Table 1), saying all six have equal validity. However, regular comparison of predicted against observed CO₂ concentration will allow a choice of the appropriate scenario for future long-run prediction of temperature trends, considerably narrowing the currently broad range of official predictions. We shall use data from Table 1 later, when discussing the proposed temperature benchmarks.

Table 1

Predicted climatic changes over 100 years

Scenario	B1	A1T	B2	A1B	A2	A1F1
ΔTs: High	2.9 C°	3.8 C°	3.8 C°	4.4 C°	5.4 C°	6.4 C°
ΔTs: Central	1.8 C°	2.4 C°	2.4 C°	2.8 C°	3.4 C°	4.0 C°
ΔTs: Low	1.1 C°	1.4 C°	1.4 C°	1.7 C°	2.0 C°	2.4 C°
Sea level: High	0.38 m	0.45 m	0.43 m	0.48 m	0.51 m	0.59 m
Sea level: Low	0.18 m	0.20 m	0.20 m	0.21 m	0.23 m	0.26 m

*Predicted global surface temperature and sea-level increases, 1990-99 to 2090-99, on six scenarios for population change, economic growth, and consequent change in CO₂ emissions. **Source:** IPCC (2007), Table SPM-3.*

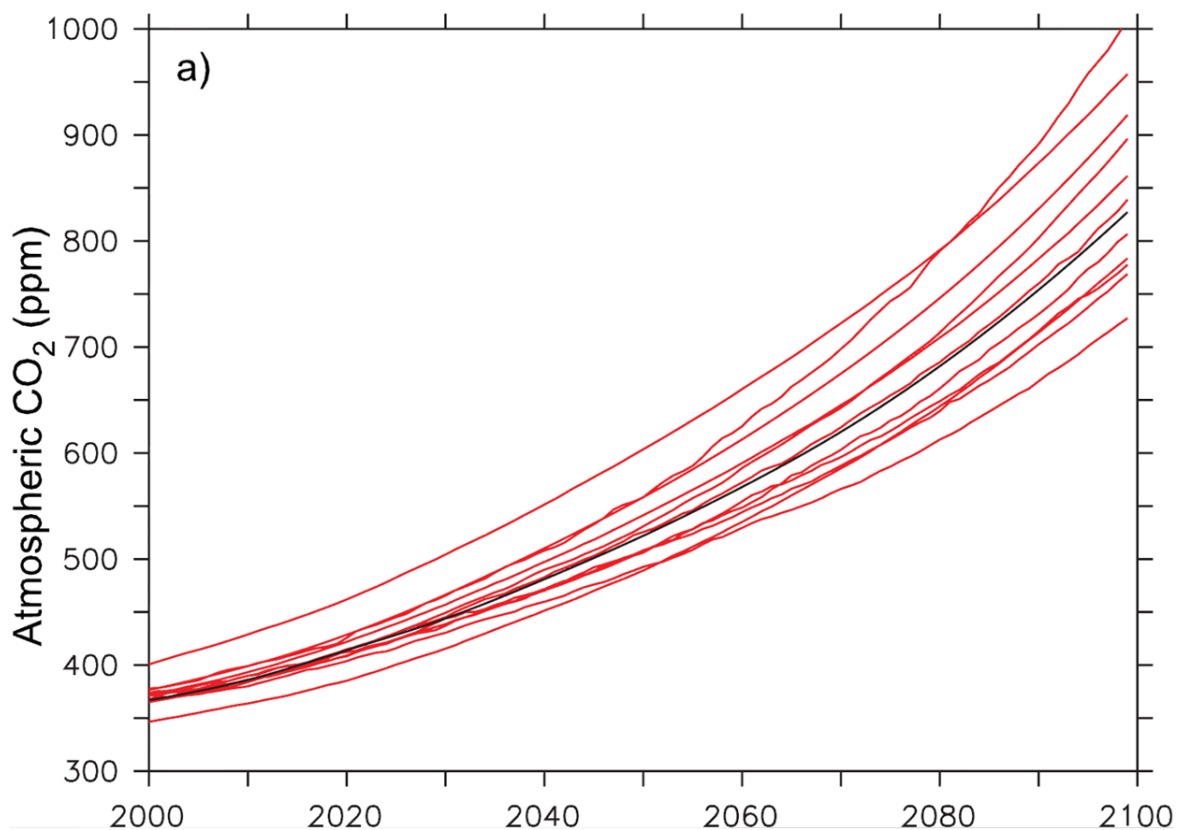
Though the six scenarios differ from one another chiefly in their assumptions about population growth, economic activity and hence rates of increase in CO₂ emissions, Table SPM-3 neglects to predict CO₂ concentration at the end of the 21st century. It predicts only temperature change and sea-level change. Of the six scenarios, the only one for which the text of IPCC (2007) predicts CO₂ concentration is A2, which –

“... describes a very heterogeneous world. The underlying theme is self-reliance and preservation of local identities. Fertility patterns across regions converge very slowly, which results in continuously increasing population. Economic development is primarily regionally oriented and per capita economic growth and technological change more fragmented and slower than other storylines.” (IPCC, 2007, p.18)

The A2 scenario perhaps exaggerates future population growth, which may well cease by 2050 on current trends, but perhaps underestimates future economic growth. This scenario implies more warming than all other scenarios but one. Scenario A2 is the basis for the modelling proposed here.

Figure 1

Officially-predicted CO₂ concentration change



“21st-century atmospheric CO₂ concentration as simulated by the 11 C4MIP models for the SRES A2 emission scenario (**red**) compared with the standard atmospheric CO₂ concentration used as a forcing for many IPCC AR4 climate models (**black**). The standard CO₂ concentration values were calculated by the BERN-CC model and are identical to those used in the TAR. For some IPCC-AR4 models, different carbon cycle models were used to convert carbon emissions to atmospheric concentrations.” **Source:** IPCC, 2007, p.790.

IPCC (2007: p.790), relying on the BERN carbon-cycle climate model, estimates that atmospheric CO₂ concentration will be 836 [730, 1020] ppmv by 2100. Figure 1, from IPCC (2007), shows the BERN prediction in black, with the predictions of 11 other models in red.

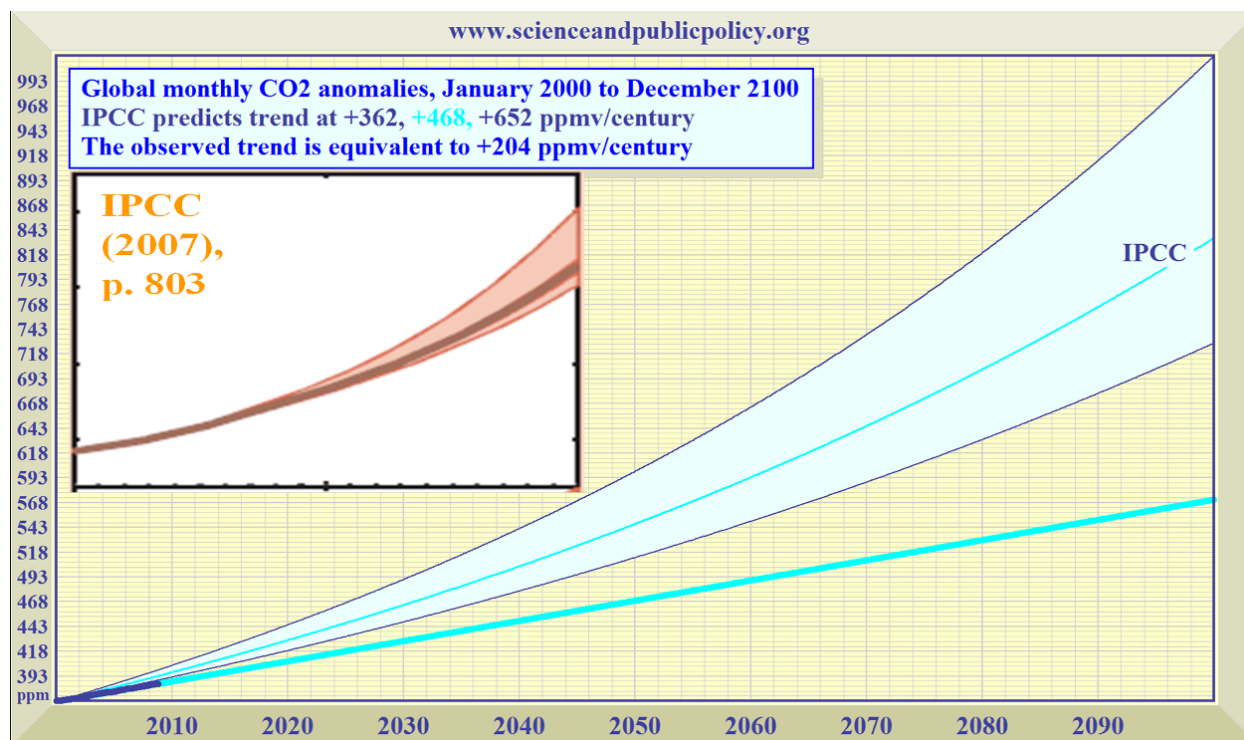
It is proposed here that a benchmark graph displaying observed against officially- predicted CO₂ concentration should be published monthly for the benefit of policymakers.

On the CO₂ graph (Figure 2), the predictions of the models relied upon by the IPCC are shown as a region bounded by exponential curves similar to those in Figure 1.

The curves originate at the start-point of the linear regression on the observed data for the chosen period. They approach the upper, central, and lower estimates of CO₂ concentration in 2100 under the A2 scenario. In all the graphs, CO₂ or temperature anomalies are expressed as positive differences from the least data element.

Figure 2

CO₂ concentration: observation vs. prediction



Observed and predicted CO₂ concentration, 2000-2100: The pale-blue region, bounded by exponential curves, demonstrates the IPCC's predicted path for CO₂ concentration. The observed, deseasonalized data from January 2000 to November 2008 (dark blue), at this resolution, appears coincident with the least-squares linear-regression trend, (solid, light-blue line). The graph of the predictive region reproduces the conformation of the IPCC's graph for scenario A2 [inset]. **Data sources:** NOAA; [inset] IPCC (2007), p.803, after aspect-ratio adjustment.

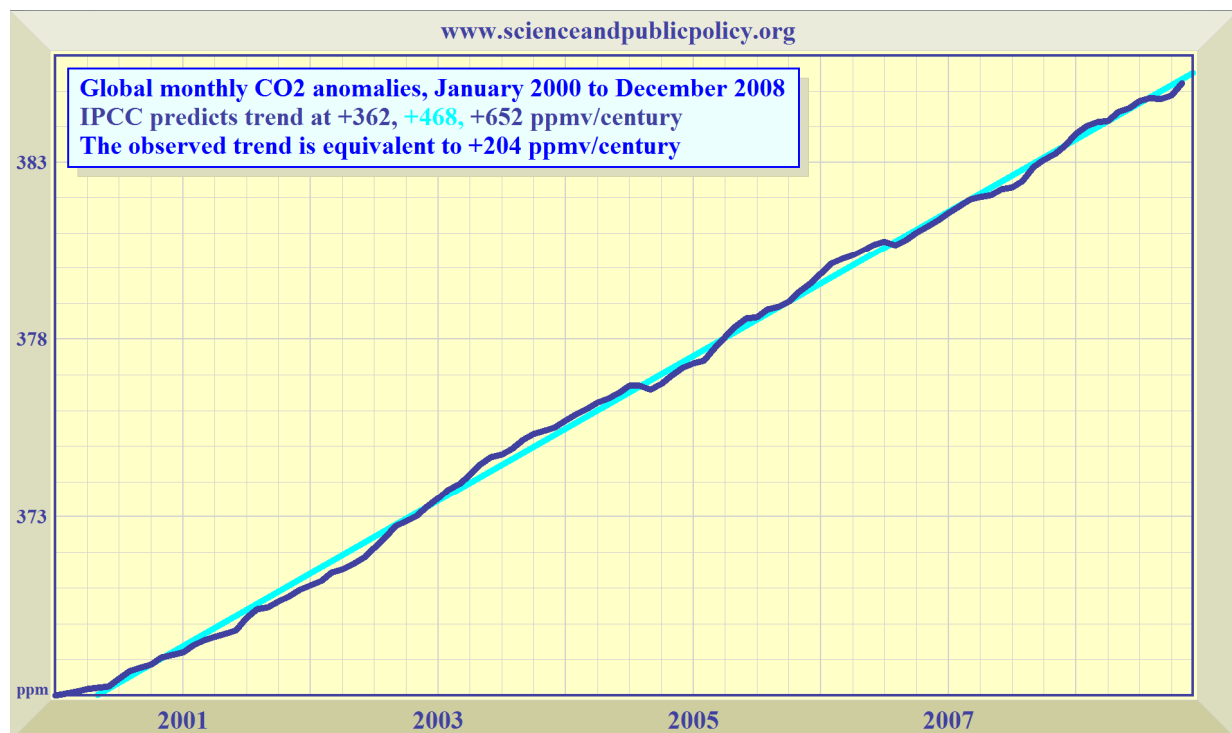
Observational data are taken from the US National Oceanographic and Atmospheric Administration's global monthly index of atmospheric CO₂ concentration. The dataset, commencing in January 1980, is available either with or without seasonal variations. Here, for clarity, the deseasonalized version is adopted.

The NOAA data are preferred to the Mauna Loa data because the former represent a global mean, the latter a single location. There is at present little difference of substance between the two datasets.

The IPCC predicts that CO₂ concentration will grow exponentially. However, as Figure 3 shows, over the past decade the increase appears to have settled to a trend that is strikingly close to linear, at a rate equivalent to ~200 ppmv/century –

Figure 3

Near-linear trend in CO₂ concentration growth



Straight-line CO₂ trend: For nine years, atmospheric concentration of CO₂ has been increasing at a near-linear rate equivalent to ~200 ppmv/century. The least-squares regression (light blue) is a close fit to the observed data (dark blue). The IPCC's prediction is for an exponential increase of 468 [362, 652] ppmv/century. **Data source:** NOAA deseasonalized monthly global CO₂ anomalies.

GLOBAL SURFACE TEMPERATURE CHANGE

In the IPCC's methodology, anthropogenic temperature change is a logarithmic function of the proportionate change in atmospheric CO₂ concentration.

IPCC (2007) estimates that climate sensitivity, defined as global surface temperature response to a doubling of atmospheric CO₂ concentration, is 3.26 [2, 4.5] C° –

“The equilibrium climate sensitivity is a measure of the climate system response to sustained radiative forcing. It is not a projection but is defined as the global average surface warming following a doubling of carbon dioxide concentrations. It is *likely* to be in the range 2 C° to 4.5 C° with a best estimate of about 3 C°, and is *very unlikely* to be less than 1.5 C°. (IPCC, 2007, p.12)

This represents the second of two substantial reductions in the official, central estimate of climate sensitivity –

“The likely range for equilibrium climate sensitivity was estimated in the Third Assessment Report (Technical Summary, Section F.3; Cubasch et al., 2001) to be 1.5 C° to 4.5 C°. The range was the same as in an early report of the National Research Council (Charney, 1979), and the two previous IPCC assessment reports (Mitchell et al., 1990; Kattenberg et al., 1996). These estimates were expert assessments largely based on equilibrium climate sensitivities simulated by atmospheric GCMs coupled to non-dynamic slab oceans. The mean ± 1 standard deviation values from these models were **3.8 C° \pm 0.78 C°** in the SAR (17 models),

3.5 C° ± 0.92 C° in the TAR (15 models) and in this assessment **3.26 C° ± 0.69 C°** (18 models).” (IPCC, 2007, p.798)

The IPCC’s method of evaluating climate sensitivity originated in Hansen (1984)^{viii}, and Hansen (1988)^{ix}, who found climate sensitivity to be ~4.2 C° for a CO₂ doubling.

However, Hansen (2006)^x gives a central estimate $\lambda = \kappa f \approx 0.75 \text{ C}^\circ \text{ W}^{-1} \text{ m}^2$ for the final-climate-sensitivity parameter, whereas the value implicit in the IPCC’s current central estimate of climate sensitivity is $\lambda \approx 0.96 \text{ C}^\circ \text{ W}^{-1} \text{ m}^2$ (Monckton, 2008). Substituting Hansen’s value $\lambda \approx 0.75 \text{ C}^\circ \text{ W}^{-1} \text{ m}^2$, the IPCC’s central estimate of climate sensitivity would fall to 2.54 C°. We summarize the 20-year decline in official climate sensitivity estimates in Table 2 –

Table 2

Falling estimates of climate sensitivity

Year of estimate	Official Source	ΔT_s at CO ₂ doubling
1988	Hansen <i>et al.</i> , GISS	4.20 C°
1995	IPCC SAR	3.80 C°
2001	IPCC TAR	3.50 C°
2007	IPCC AR4: $\lambda \approx 0.96$	3.26 C°
2008	Hansen, GISS: $\lambda \approx 0.75$	2.54 C°

The proposed benchmarks for CO₂ concentration and global temperature will determine how much further the official estimates of climate sensitivity to atmospheric CO₂ enrichment may need to fall before they correspond to observation.

At its very simplest, climate sensitivity may be expressed directly, and without significant error, as a logarithmic function of the proportionate increase in CO₂ concentration –

$$\Delta T_s = c \ln(C/C_0) \text{ C}^\circ, \quad (4)$$

where the bracketed term is the proportionate increase in atmospheric CO₂ concentration and c is a coefficient that converts the proportionate increase directly to temperature change in Celsius degrees. We may simply derive the maximum, +1 standard deviation, central, –1 standard deviation, and minimum values of the climate sensitivity coefficient c by the simple method demonstrated in Table 3 –

Table 3

Derivation of climate sensitivity coefficients

IPCC (2007)	IPCC climate sensitivity	How coefficient evaluated	Sensitivity coefficient c
Maximum likely	4.50 C°	4.50 / ln 2	6.5
+ 1 s.d.	3.95 C°	3.95 / ln 2	5.7
Central	3.26 C°	3.26 / ln 2	4.7
– 1 s.d.	2.57 C°	2.57 / ln 2	3.7
Minimum likely	2.00 C°	2.00 / ln 2	2.9

Note that these coefficients are distinct from the more familiar coefficients $g = 6.4$ (IPCC, 1995)^{xi} or $g = 5.35$ (IPCC, 2001^{xii}, 2007) in the radiative forcing equation –

$$\Delta F_{CO_2} = g \ln(C/C_0) \text{ W m}^{-2}. \quad (5)$$

The climate sensitivity coefficients derived in Table 3 encompass not only the radiative forcing as in eqn. (5) but also all consequent temperature feedbacks, and permit a considerably-simplified, direct, but accurate conversion of any given proportionate increase in CO₂ into IPCC-predicted consequent global temperature change, closely replicating the IPCC's predicted climate sensitivity values.

We verify the applicability of Table 3's coefficients by setting them against the observed CO₂ trend to 2100 plus the three IPCC predictions for CO₂ in 2100, from which eqn. (4) is used to evaluate a range of temperature increases between 2008 and 2100 (Table 4) –

Table 4

Benchmark 21st-century temperature increases

Equilibrium climate sensitivity coefficient <i>c</i>	NOAA observed CO ₂ trend	IPCC A2 (low)	IPCC A2 (central)	IPCC A2 (high)
CO ₂ in 2100: C	570 ppmv	730 ppm	836 ppmv	1020 ppmv
CO ₂ in 2000: C ₀	368 ppmv	368 ppm	368 ppmv	368 ppmv
<i>c</i> = 6.5 (maximum)	2.8 C°	4.5 C°	5.3 C°	6.6 C°
<i>c</i> = 5.7 (+ 1 s.d.)	2.5 C°	3.9 C°	4.7 C°	5.8 C°
<i>c</i> = 4.7 (central)	2.1 C°	3.2 C°	3.9 C°	4.8 C°
<i>c</i> = 3.7 (– 1 s.d.)	1.6 C°	2.5 C°	3.0 C°	3.8 C°
<i>c</i> = 2.9 (minimum)	1.3 C°	2.0 C°	2.4 C°	3.0 C°
<i>cf. IPCC scenario A2</i>	<i>Transient:</i>	2.0 C°	3.4 C°	5.4 C°

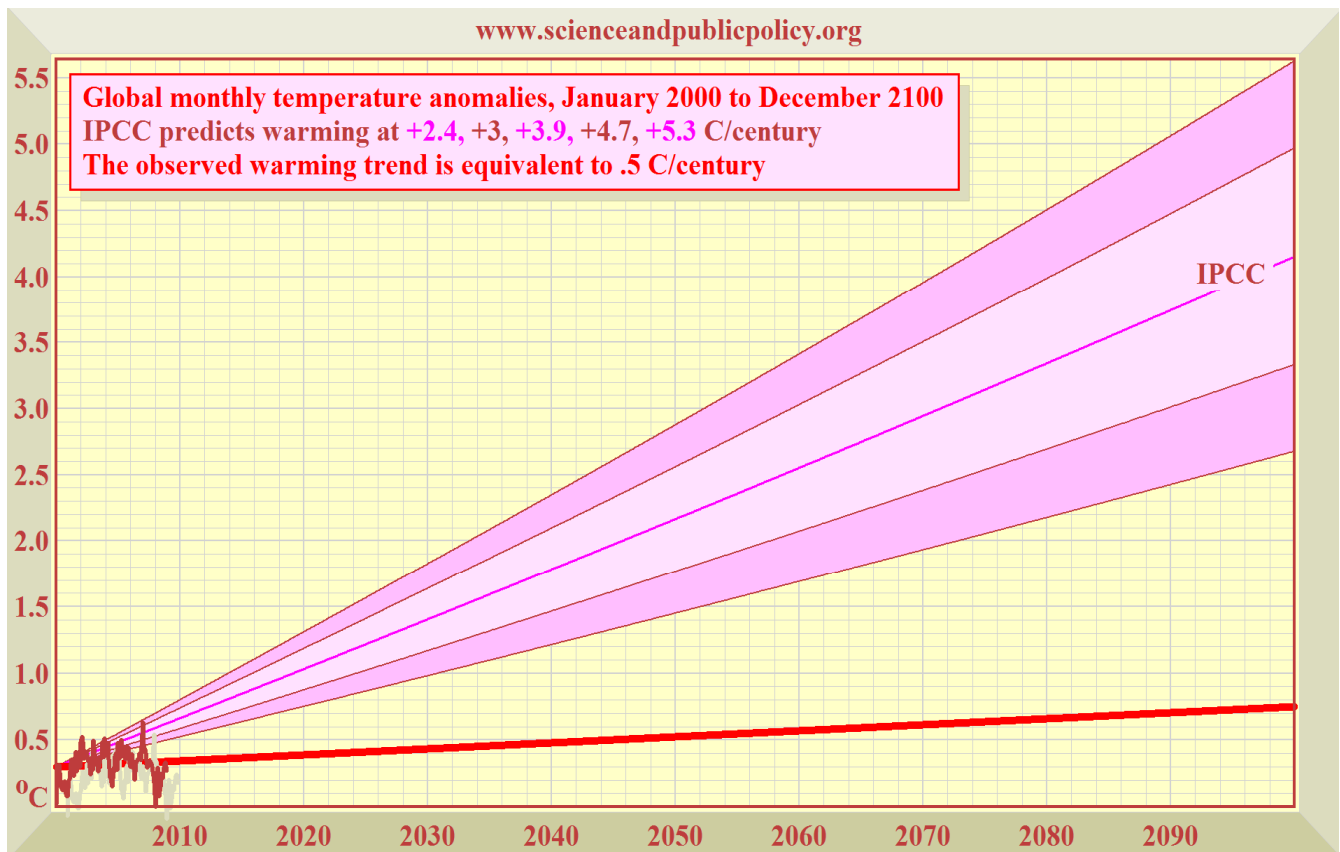
In Table 4, benchmarks for official predictions of temperature change over the 21st century are calculated from eqn. (4), the benchmarking equation, using the climate-sensitivity coefficients and CO₂ concentrations shown. There is a reasonable correspondence between the interval [1.3, 6.6] C° generated by eqn. (4), and the interval [1.1, 6.4] C° that is predicted in Table SPM3 of IPCC (2007), reproduced as Table 1 *supra*.

From these results it is legitimate to infer, in the absence of explicit confirmation by the IPCC, that the models on which its official predictions rely base their least estimate of temperature change to 2100 upon a linear extrapolation of the current linear uptrend of ~200 ppmv/century in atmospheric CO₂ concentration.

We may further verify the simplified method proposed here for replicating the predictive output of the IPCC's general-circulation models. The *equilibrium* climate-sensitivity values 3.9 [2.5, 5.8] C° at CO₂ doubling, highlighted in purple in Table 4, are each ~0.5 C° greater than the *transient*-sensitivity values 3.4 [2.0, 5.4] C° for scenario A2 given in Table SPM-3 and reproduced in purple in Table 4, indicating, again in the absence of explicit confirmation by the IPCC, that upon stabilization of CO₂ concentration it predicts <=0.5 C° “global warming” in the pipeline.

Figure 4

Global temperature trend, 2000-2100



On the benchmark 100-year graph of predicted vs. actual temperature change in the 21st century (Figure 4), the IPCC's range of predicted temperatures is visualized by a pink region displaying the maximum, +1 standard deviation, central, -1 standard deviation, and minimum officially-estimated climate sensitivities $c \ln (C/C_0)$ C°/century on the assumption that CO₂ concentration by the end of the 21st century will reach 836 ppmv, the BERN climate model's central estimate, compared with 368 ppmv observed in 2000.

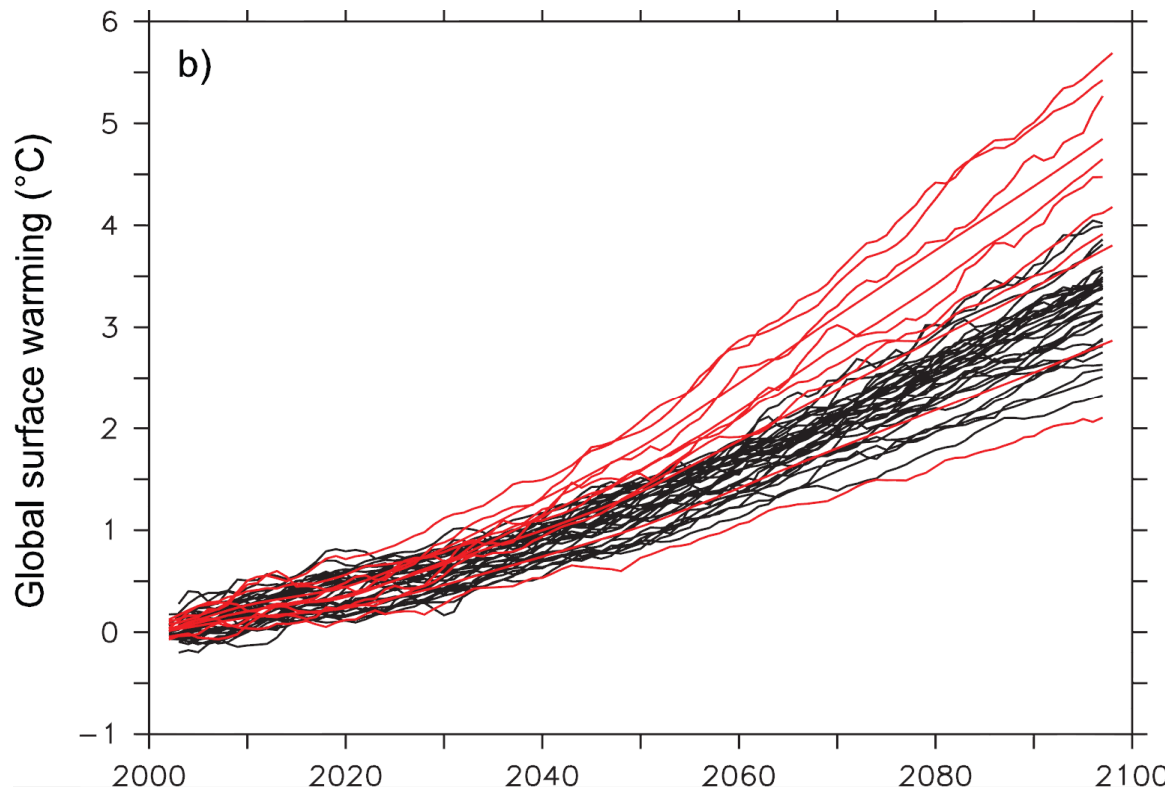
Every point on each of the five curves representing the IPCC's range of temperature predictions is calculated directly from the corresponding point on the previously-established exponential curve (Figure 2) of the IPCC's *central* prediction of CO₂ concentration to the end of the 21st century.

Since the CO₂ curve increases exponentially and the temperature is a logarithmic function of the CO₂ concentration, each of the three curves representing the IPCC's temperature predictions emerges as linear.

However, IPCC (2007) shows temperatures growing near-exponentially throughout the 21st century, starting at ~2 C°/century and accelerating to twice that rate (Figure 5), although a straight-line increase $\Delta T_s = 4.7 \ln(836/385) = 3.26$ °C/century is what the IPCC's simplified CO₂ forcing formulae would lead us to expect –

Figure 5

Officially-predicted temperature change to 2100



*“Globally averaged surface temperature change (relative to 2000) simulated by the C4MIP models forced by CO₂ emissions (**red**) compared to global warming simulated by the IPCC AR4 models forced by CO₂ concentration (**black**). The C4MIP global temperature change has been corrected to account for the non-CO₂ radiative forcing used by the standard IPCC AR4 climate models.” (IPCC, 2007, p.790)*

If we were to overlay Figures 1 and 5, appropriately-scaled curves representing increases in CO₂ concentration and in temperature would approximately coincide at all points; but, since the relationship between ΔCO_2 (Figure 1) and consequent ΔT_s (Figure 5) is logarithmic, *prima facie* no such coincidence should be possible.

The climate models are detuned so that they predict a slower initial increase in temperature than that which the officially-predicted exponential CO₂ growth and the logarithmic temperature response would generate.

There is a short-run lag in climate response to external forcings caused by the massive thermal inertia of the oceans. There is a medium-run delay before the triggering of feedbacks such as the surface-albedo feedback from melting polar ice. There is also a long-run shortfall between transient and equilibrium climate response, though Table 4 suggests that the predicted temperature difference between the two states of the climate is not great.

It is also possible that the climate models, trained to replicate and extrapolate past climate trends, may contain strong inbuilt biases against predicting sudden accelerations in the observed rate of temperature change over the short term.

Likewise, it is possible that, though the models predict exponential CO₂ concentration growth (see Figure 1), their outputs take account of the evidence that already the IPCC’s prediction

concerning CO₂ has not proven skilful, for CO₂ growth is merely linear, and lies well below the region where the IPCC's predictions fall.

Nevertheless, for simplicity and clarity, little error will arise if we retain the linear trend-lines representing official predictions of temperature change to equilibrium that are generated by the simplified equations that we have described, not least because the relationship between proportionate increase in CO₂ concentration and temperature change is logarithmic, not linear: therefore, at its simplest, the temperature response to exponentially-rising CO₂ concentration should be close to linear, not exponential.

Since 1980, mean global surface temperatures on the composite index described here have risen at a rate equivalent to ~1.5 °C/century.

This rate is somewhat below the ~2 °C/century rate predicted by the IPCC for the next two decades. It is still further below the linear trend equivalent to ~3.26 °C/century that the IPCC's formula for carbon dioxide concentration would lead us to expect.

Our choices of IPCC predictions, while intended to be reasonable, are not the only possible choices, because the IPCC's ranges of predictions both for CO₂ concentration and for climate sensitivity are very wide, indicating greater uncertainty than the texts of the IPCC's *Summaries for Policymakers* reflect.

Against the temperature benchmarks that we have derived from the IPCC's 2007 report, actual monthly temperature anomalies are plotted in Figure 7 (below). Since 1980, calibrated satellite measurements of temperature in the lower troposphere have been available to supplement the terrestrial datasets.

To improve reliability, therefore, the arithmetic mean of the monthly anomalies taken from two terrestrial and two satellite datasets is taken, effectively forming a new dataset. This procedure need not preclude testing the IPCC's predictions against the observations in any individual dataset when required.

The four global-temperature monthly-anomaly datasets whose arithmetic mean is used in compiling the benchmark temperature graphs are –

- Hadley/Climate Research Unit, University of East Anglia^{xiii};
- National Climatic Data Center^{xiv};
- Remote Sensing Systems' satellite lower-troposphere dataset^{xv}; and
- University of Alabama at Huntsville lower-troposphere dataset^{xvi}.

The first two of these datasets are terrestrial records compiled from ground stations; the last two are satellite records of temperature in the lower troposphere.

The satellite datasets tend to show smaller fluctuations than the terrestrial datasets, because they are recording temperature not only at the surface but also for some distance above it, where the lapse-rate reduces temperature variations.

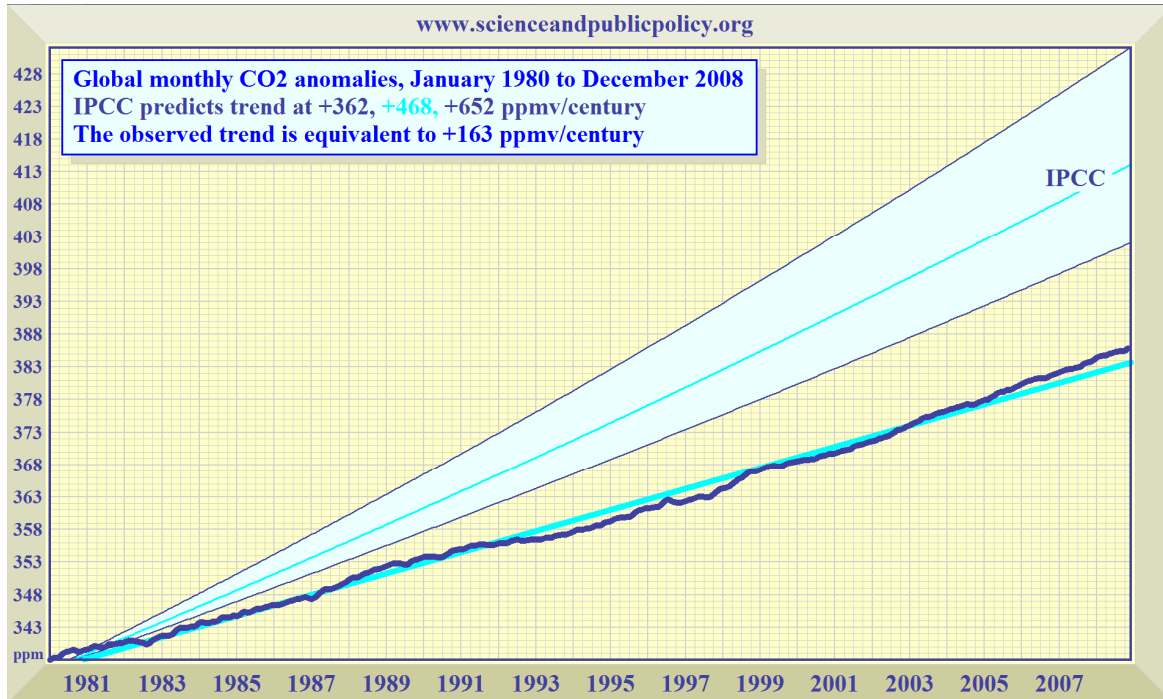
The NASA GISS dataset is not used. It is very close to the NCDC dataset.

RESULTS

Since 1980, CO₂ concentration has been rising at a rate equivalent to 163 ppmv/century (Figure 6) –

Figure 6

CO₂ concentration growth, 1980-2008



Global CO₂ concentration: Anomalies since 1980 are shown. **Data source:** NOAA.

The IPCC's predicted path for CO₂ concentration appears linear in Figure 6, but is in fact composed of exponential curves.

Observed CO₂ concentration appears to have risen linearly since 1980, but the rate of increase has itself been increasing slowly. Though the observed rate of increase, averaged over the 29 years 1980-2008, is equivalent to 163 ppmv/century, the observed rate of increase since 2000 is equivalent to a near-linear 204 ppmv (Figures 2, 3).

It is evident that CO₂ concentration is not following the path predicted for the IPCC's scenario. Extrapolation of the 21st-century linear trend would increase CO₂ concentration from its current 385 ppmv to ~570 ppmv by 2100. This value is close to the lower bound on any of the IPCC's scenarios.

If the trend in CO₂ concentration growth were to continue on its present near-linear path, the effect of the increase in CO₂ concentration on temperature would be approximately half of the IPCC's current central estimate for scenario A2 –

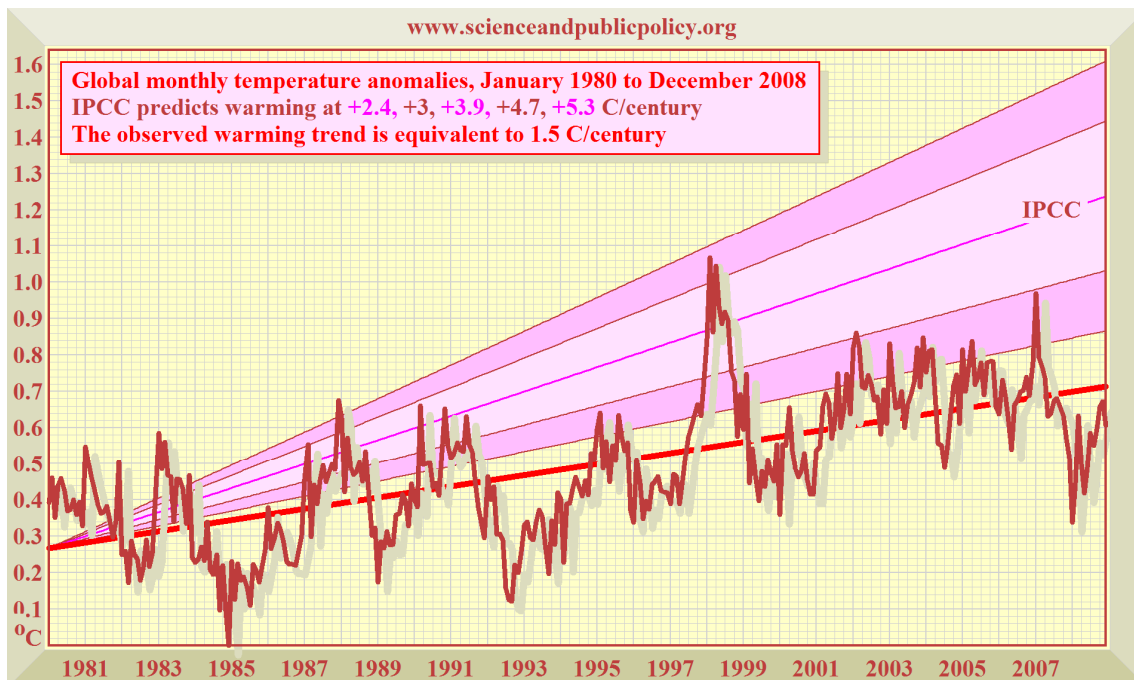
$$\Delta T_{S, A2} = 4.7 \ln(836/385) \approx 3.64 \text{ }^{\circ}\text{C} \quad [\text{IPCC (2007), A2}]$$

$$\Delta T_{S, obs} = 4.7 \ln(570/385) \approx 1.84 \text{ }^{\circ}\text{C} \quad [\text{on observed trend}]$$

Given that CO₂ concentration is rising at a rate substantially below the IPCC's predictions, it is perhaps no surprise that temperature, over the period since 1980 (the earliest year of our benchmarking data), is also rising at a rate well below prediction (Figure 7) –

Figure 7

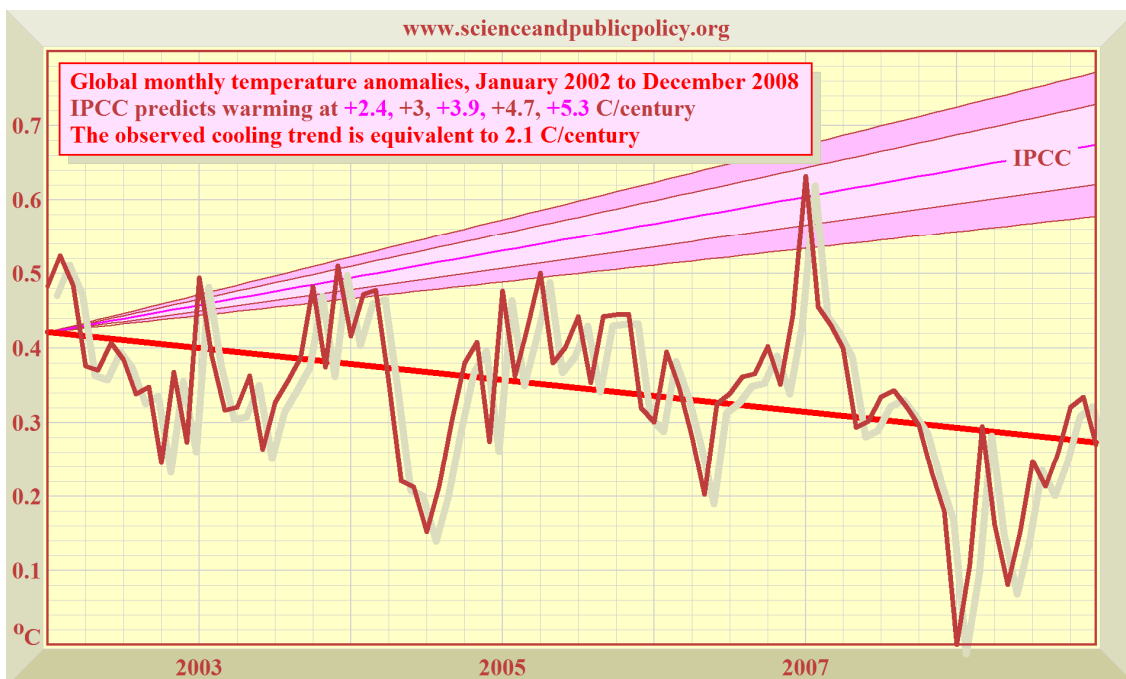
Temperature was rising, but well below prediction



From Figure 7, it appears that a phase-transition in the global-temperature record occurred in the winter of 2001-2, as a result of which global temperatures have fallen since the beginning of 2002. Figure 8 shows this fall in global temperatures –

Figure 8

Seven years' decline in global temperatures



As Figure 8 demonstrates, for the past seven years global temperatures have indeed been declining at a rate equivalent to $>2\text{ }^{\circ}\text{C}/\text{century}$. The fact that this not insignificant period of rapid decline in global mean surface temperatures has gone largely unreported indicates the need for the reliable, monthly-updated temperature trends that are proposed here.

CONCLUSION

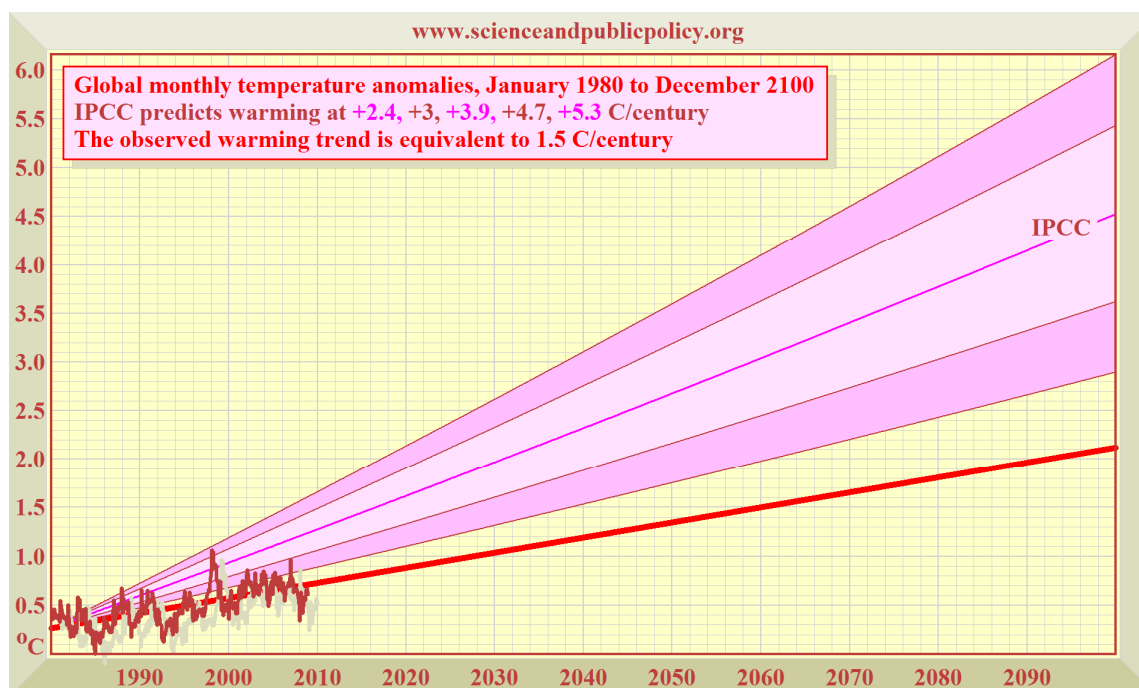
Policymakers have spoken of closing down as much as 95% of the carbon-emitting economies of the West in the name of mitigating “global warming”. The heavy cost of wholesale shutdown would fall disproportionately on the poor. Already, world food prices have doubled in two years as large tracts of farmland have been taken out of food production to grow biofuels, whose utility in reducing carbon emissions is questionable.

The World Bank has attributed three-quarters of the doubling of world food prices to the widespread abandonment of food-growing in favor of biofuels. Starvation and food riots have recently resulted in many regions, but have largely gone unreported in the West, where the world’s climate-change-driven policies are chiefly set. Instead it is the often-imaginary or exaggerated consequences of anthropogenic climate change that have commanded the headlines.

The trend in global mean surface temperatures since the satellite temperature data and global CO_2 concentration data became available in 1980, if it were extrapolated as far as 2100 (Figure 9), would fall considerably short of the IPCC’s official predictions –

Figure 9

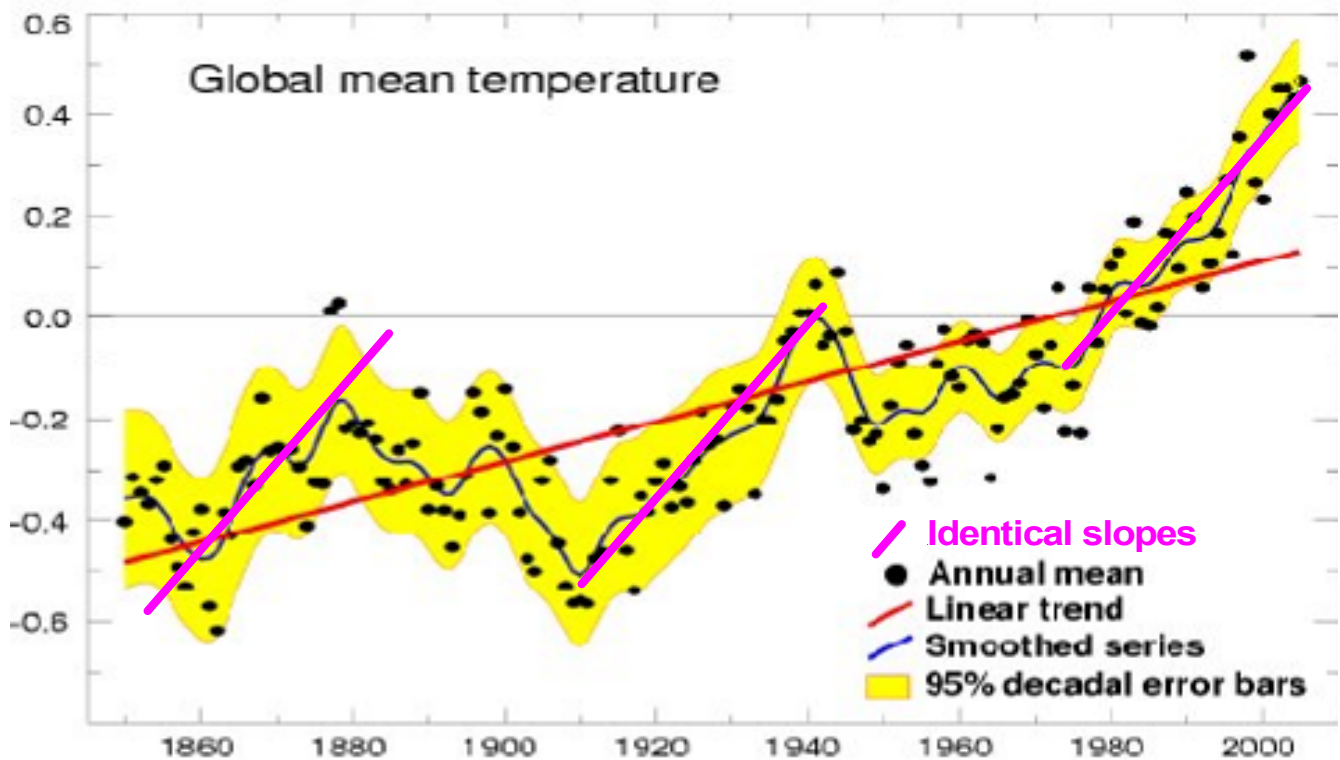
Temperature change, 1980-2100



Though it is often stated that the rate of increase in global temperatures in the last quarter of the 20th century was unprecedented, Figure 10 shows that there were two periods of similar warming within the past 150 years –

Figure 10

Precedents for the warming rate of 1975-2000



Identical warming rates: Global temperatures (C°) have been recovering since the 70-year Maunder Minimum (1645-1715). During the second half of this 300-year period of warming, shown above, the warming rate of the last quarter of the 20th century was identical to that from 1860-1880 and to that from 1910-1940. **Data source:** IPCC (2007). Author's trend lines (magenta).

If Scafetta & West (2008)^{xvii} are right in their conclusion that 69% of the warming in recent decades was of solar origin, then the influence of CO₂ on temperature may prove in reality to be considerably less than the models have suggested.

The published, monthly monitoring of official climatic predictions that has been outlined, justified, and demonstrated here will permit policymakers to decide for themselves to what extent the growth in CO₂ concentration and in global mean surface temperatures predicted by the IPCC and other official sources is occurring in observed reality; and to what extent, if at all, expensive attempts at intervention to mitigate growth in anthropogenic emissions of CO₂ and other greenhouse gases are either necessary or desirable.

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